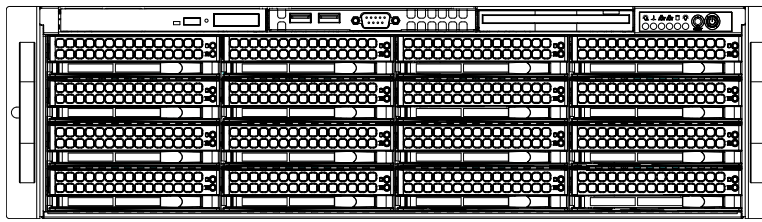
SUPERO®

SC836 Chassis Series



SC836TQ - R800B

SC836E1 - R800B

SC836E2 - R800B

SC836TQ - R710B

User's Manual

2.0b

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Preface

About This Manual

This manual is written for professional system integrators and PC technicians. It provides information for the installation and use of the SC836 3U chassis. Installation and maintenance should be performed by experienced technicians only.

Supermicro's SC836 3U chassis features a unique and highly-optimized design for dual-core Xeon platforms. The chassis is equipped with a redundant 800W high efficiency power supply. High performance fans provide ample optimized cooling for FB-DIMM memory modules and 16 hot-swap drive bays offers maximum storage capacity in a 3U form factor.

This document lists compatible parts available when this document was published. Always refer to the our Web site for updates on supported parts and configurations.

Manual Organization

Chapter 1 Introduction

The first chapter provides a checklist of the main components included with this chassis and describes the main features of the SC836 chassis. This chapter also includes contact information.

Chapter 2 System Safety

This chapter lists warnings, precautions, and system safety. You should thoroughly familiarize yourself with this chapter for a general overview of safety precautions that should be followed before installing and servicing this chassis.

Chapter 3 Chassis Components

Refer here for details on this chassis model including the fans, bays, airflow shields, and other components.

Chapter 4 System Interface

Refer to this chapter for details on the system interface, which includes the functions and information provided by the control panel on the chassis as well as other LEDs located throughout the system.

Chapter 5 Chassis Setup and Maintenance

Refer to this chapter for detailed information on this chassis. You should follow the procedures given in this chapter when installing, removing, or reconfiguring your chassis.

Chapter 6 Advanced Setup

Refer to this chapter for detailed instructions for advanced setup configurations including multiple chassis connections.

Chapter 7 Rack Installation

Refer to this chapter for detailed information on chassis rack installation. You should follow the procedures given in this chapter when installing, removing or reconfiguring your chassis into a rack environment.

Compatible Backplanes

This section lists compatible cables, power supply specifications, and compatible backplanes. Not all compatible backplanes are listed. Refer to our Web site for the latest compatible backplane information.

Appendix A SC836 Chassis Cables

Appendix B SC836 Power Supply Specifications

Appendix C SAS 836EL Series Backplane Specifications

Appendix D SAS 836TQ Backplane Specifications

Appendix E PCC-JBWR2 and CSE-PTJBOD-CB1 Power Control Card Specifications

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Appendix C SAS-836EL Backplane Specifications

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Appendix E PCC-JBPWR2 and CSE-PTJBOD-CB1 Power Control Card Specifications

Chapter 1

Introduction

1-1 Overview

Supermicro's SC836 3U chassis features a unique and highly-optimized design. The chassis is equipped with a redundant high efficiency power supply. High performance fans provide ample optimized cooling for FB-DIMM memory modules and 16 hot-swap drive bays offer maximum storage capacity in a 3U form factor.

1-2 Shipping List

Part Numbers

Please visit the following link for the latest shipping lists and part numbers for your particular chassis model:
http://www.supermicro.com/products/chassis/3U/?chs=836

SC836 Chassis Series				
Model	**CPU**	**HDD**	**I/O Slots**	**Power Supply**
SC836TQ-R800V(B)	DP Dual-core Xeon	16x SAS / SATA	7x FF	R800W
SC836E1-R800V(B)	DP Dual-core Xeon	16x SAS	7x FF	R800W
SC836E2-R800	DP Dual-core Xeon	16x SAS	7x FF	R800W
SC836TQ-R710B	DP Dual-core Xeon	16x SAS / SATA	7x FF	R710W

1-3 Chassis Features

The SC836 3U high performance chassis includes the following features:

CPU Support

The SC836 Chassis supports a DP Dual-core Xeon processor. Please refer to the motherboard specifications pages on our Web site for updates on supported processors for this chassis

Hard Drives

The SC836 Chassis features 16 slots for U320 SCSI or SAS/SATA drives. These drives are hot swappable. In other words, once setup correctly, these drives can be removed without powering down the server. In addition, these drives support SAF-TE (SCSI) and SES2 (SAS/SATA).

I/O Expansion slots

Each version of the SC836 Chassis includes 7 full I/O expansion slots.

Peripheral Drives

Each SC836 Chassis supports one slim DVD-ROM Drive (included) and one slim Floppy Drive (optional). These drives allow you to quickly install or save data.

Other Features

Other onboard features are included to promote system health. These include various five cooling fans, a convenient power switch, reset button, and LED indicators.

1-4 Contacting SuperMicro

Headquarters

Address:	Super Micro Computer, Inc.
	980 Rock Ave.
	San Jose, CA 95131 U.S.A.
Tel:	+1 (408) 503-8000
Fax:	+1 (408) 503-8008
Email:	marketing@supermicro.com (General Information)
	support@supermicro.com (Technical Support)
Web Site:	www.supermicro.com

Europe

Address:	Super Micro Computer B.V.
	Het Sterrenbeeld 28, 5215 ML
	's-Hertogenbosch, The Netherlands
Tel:	+31 (0) 73-6400390
Fax:	+31 (0) 73-6416525
Email:	sales@supermicro.nl (General Information)
	support@supermicro.nl (Technical Support)
	rma@supermicro.nl (Customer Support)

Asia-Pacific

Address:	Super Micro Computer, Taiwan
	4F, No. 232-1, Liancheng Rd.
	Chung-Ho 235, Taipei County
	Taiwan, R.O.C.
Tel:	+886-(2) 8226-3990
Fax:	+886-(2) 8226-3991
Web Site:	www.supermicro.com.tw
Technical Support:	
Email:	support@supermicro.com.tw
Tel:	886-2-8228-1366, ext.132 or 139

1-5 Returning Merchandise for Service

A receipt or copy of your invoice marked with the date of purchase is required before any warranty service will be rendered. You can obtain service by calling your vendor for a Returned Merchandise Authorization (RMA) number. When returning to the manufacturer, the RMA number should be prominently displayed on the outside of the shipping carton, and mailed prepaid or hand-carried. Shipping and handling charges will be applied for all orders that must be mailed when service is complete.

For faster service, RMA authorizations may be requested online (http://www.supermicro.com/support/rma/).

Whenever possible, repack the chassis in the original Supermicro carton, using the original packaging material. If these are no longer available, be sure to pack the chassis securely, using packaging material to surround the chassis so that it does not shift within the carton and become damaged during shipping.

This warranty only covers normal consumer use and does not cover damages incurred in shipping or from failure due to the alteration, misuse, abuse or improper maintenance of products.

During the warranty period, contact your distributor first for any product problems.

Chapter 2

System Safety

2-1 Overview

This chapter provides a quick setup checklist to get your chassis up and running. Following the steps in order given should enable you to have your chassis setup and operational within a minimal amount of time. These instructions assume that you are an experienced technician, familiar with common concepts and terminology.

2-2 Warnings and Precautions

You should inspect the box the chassis was shipped in and note if it was damaged in any way. If the chassis itself shows damage, file a damage claim with the carrier who delivered your system.

Decide on a suitable location for the rack unit that will hold the chassis. It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated.

You will also need it placed near at least two grounded power outlets. The SC836 chassis includes two redundant power supplies which require two grounded outlets.

2-3 Preparing for Setup

The SC836 Chassis includes a set of rail assemblies, including mounting brackets and mounting screws you will need to install the systems into the rack. Please read this manual in its entirety before you begin the installation procedure.

2-4 Electrical Safety Precautions

Basic electrical safety precautions should be followed to protect yourself from harm and the SC836 from damage:

- Be aware of the locations of the power on/off switch on the chassis as well as the room's emergency power-off switch, disconnection switch or electrical outlet. If an electrical accident occurs, you can then quickly remove power from the system.

- Do not work alone when working with high voltage components.

- Power should always be disconnected from the system when removing or installing main system components, such as the serverboard, memory modules and the DVD-ROM and floppy drives (not necessary for hot swappable drives). When disconnecting power, you should first power down the system with the operating system and then unplug the power cords from all the power supply modules in the system.

- When working around exposed electrical circuits, another person who is familiar with the power-off controls should be nearby to switch off the power, if necessary.

- Use only one hand when working with powered-on electrical equipment. This is to avoid making a complete circuit, which will cause electrical shock. Use extreme caution when using metal tools, which can easily damage any electrical components or circuit boards they come into contact with.

- Do not use mats designed to decrease electrostatic discharge as protection from electrical shock. Instead, use rubber mats that have been specifically designed as electrical insulators.

- The power supply power cord must include a grounding plug and must be plugged into grounded electrical outlets.

- Serverboard Battery: CAUTION - There is a danger of explosion if the onboard battery is installed upside down, which will reverse its polarities This battery must be replaced only with the same or an equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

- DVD-ROM Laser: CAUTION - this server may have come equipped with a DVD-ROM drive. To prevent direct exposure to the laser beam and hazardous radiation exposure, do not open the enclosure or use the unit in any unconventional way.

2-5 General Safety Precautions

- Keep the area around the chassis clean and free of clutter.
- Place the chassis top cover and any system components that have been removed away from the system or on a table so that they won't accidentally be stepped on.
- While working on the system, do not wear loose clothing such as neckties and unbuttoned shirt sleeves, which can come into contact with electrical circuits or be pulled into a cooling fan.
- Remove any jewelry or metal objects from your body, which are excellent metal conductors that can create short circuits and harm you if they come into contact with printed circuit boards or areas where power is present.
- After accessing the inside of the system, close the system back up and secure it to the rack unit with the retention screws after ensuring that all connections have been made.

2-6 System Safety

Electrostatic discharge (ESD) is generated by two objects with different electrical charges coming into contact with each other. An electrical discharge is created to neutralize this difference, which can damage electronic components and printed circuit boards. The following measures are generally sufficient to neutralize this difference before contact is made to protect your equipment from ESD:

- Do not use mats designed to decrease electrostatic discharge as protection from electrical shock. Instead, use rubber mats that have been specifically designed as electrical insulators.
- Use a grounded wrist strap designed to prevent static discharge.
- Keep all components and printed circuit boards (PCBs) in their antistatic bags until ready for use.

- Touch a grounded metal object before removing any board from its antistatic bag.
- Do not let components or PCBs come into contact with your clothing, which may retain a charge even if you are wearing a wrist strap.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or contacts.
- When handling chips or modules, avoid touching their pins.
- Put the serverboard and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the serverboard.

Chapter 3

Chassis Components

3-1 Overview

This chapter describes the most common components included with your chassis. Some components listed may not be included or compatible with your particular chassis model. For more information, see the installation instructions detailed later in this manual.

3-2 Components

Chassis and Chassis Bays

Chassis include one slim CD-ROM bay, one slim floppy disc drive bay, one front port panel, and 16 hard drive bays. Most chassis models include a DVD-ROM. Floppy disc drives and hard drives must be purchased separately. For the latest shipping lists, visit our Web site at: http://www.supermicro.com.

Backplane

Each SC836 chassis comes with a 3U backplane. Depending on our order, your backplane will accept SAS/SATA drives, SAS only, or SCSI drives. For more information regarding compatible backplanes, view the appendices found at the end of this manual. In addition, visit our Web site for the latest information: http://www.supermicro.com.

Fans

The SC836 chassis accepts five system fans with an optional fifth fan. System fans for SC836 chassis are powered from the serverboard. These fans are 3U compatible and are powered by 3-pin connectors.

Mounting Rails

The SC836 can be placed in a rack for secure storage and use. To setup your rack, follow the step-by-step instructions included in this manual.

Power Supply

Each SC836 chassis model includes redundant high-efficiency "hot-swappable" power supply rated at 710 or 800 Watts. In the unlikely event power supply fails in one power supply, you can remove and replace the faulty power supply without powering down the system.

Air Shroud

Air shrouds are shields, usually plastic, that funnel air directly to where it is needed. **Always use the air shroud included with your chassis**.

3-3 Where to get Replacement Components

Though not frequently, you may need replacement parts for your system. To ensure the highest level of professional service and technical support, we strongly recommend purchasing exclusively from our Supermicro Authorized Distributors / System Integrators / Resellers. A list of Supermicro Authorized Distributors / System Integrators /Reseller can be found at: http://www.supermicro.com. Click the Where to Buy link.

Chapter 4

System Interface

4-1 Overview

There are several LEDs on the control panel as well as others on the drive carriers to keep you constantly informed of the overall status of the system as well as the activity and health of specific components. Most SC836 models are two buttons on the chassis a control panel: a reset button and an on/off switch. This chapter explains the meanings of all LED indicators and the appropriate response you may need to take.

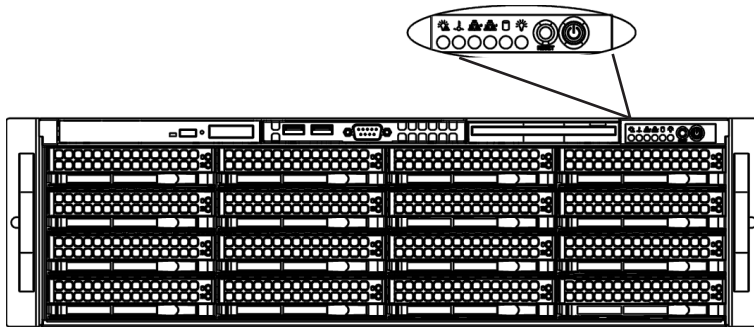
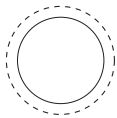


Figure 4-1: SC836 Front Panel

4-2 Control Panel Buttons

There are two push-buttons located on the front of the chassis. These are (in order from left to right) a reset button and a power on/off button.



- **Reset:** The reset button is used to reboot the system.

- **Power:** The main power switch is used to apply or remove power from the power supply to the server system. Turning off system power with this button removes the main power but keeps standby power supplied to the system. Therefore, you must unplug system before servicing.

4-3 Control Panel LEDs

The control panel located on the front of the SC836 chassis has 6 LEDs. These LEDs provide you with critical information related to different parts of the system. This section explains what each LED indicates when illuminated and any corrective action you may need to take.

- **Power Failure:** When this LED flashes, it indicates a power failure in the power supply.

- **Overheat/Fan Fail:** When this LED flashes it indicates a fan failure. When continuously on (not flashing) it indicates an overheat condition, which may be caused by cables obstructing the airflow in the system or the ambient room temperature being too warm. Check the routing of the cables and make sure all fans are present and operating normally. You should also check to make sure that the chassis covers are installed. Finally, verify that the heatsinks are installed properly. This LED will remain flashing or on as long as the overheat condition exists.

- **NIC2:** Indicates network activity on LAN2 when flashing.

- **NIC1:** Indicates network activity on LAN1 when flashing.

- **HDD:** Indicates IDE channel activity. SAS/SATA drive, SCSI drive, and/or DVD-ROM drive activity when flashing.

- **Power:** Indicates power is being supplied to the system's power supply units. This LED should normally be illuminated when the system is operating.

4-4 Drive Carrier LEDs

Each SAS drive carrier has two LEDs.

- **Blue:** When illuminated, this blue LED (on the front of the drive carrier) indicates drive activity. A connection to the SAS backplane enables this LED to blink on and off when that particular drive is being accessed.
- **Red:** The red LED to indicate a drive failure. If one of the SAS drives fail, you should be refer to your system management software.

Chapter 5

Basic Chassis Setup and Maintenance

5-1 Overview

This chapter details the basic steps required to install components to the chassis. The only tool you will is a Phillips screwdriver. Print this page to use as a reference while setting up your chassis.

When coupled with an 836E series backplane, this chassis is capable of failover, and cascading. Review Chapter 6 and the 836E Series Backplane Manual for setup instructions.

5-2 Installation

Removing the Chassis Cover
Installing Hard Drives
Motherboard Installation (includes motherboard power supply and I/O slot setup)
Installing the Air Shroud
Installing System Fans
Replacing the Power Distributor
Replacing the DVD-ROM, Front Panel and Floppy Drive.

Note: The SC836E1 and SC836E2 chassis support SAS drives only. For more information, review the SAS 836EL Backplane Specifications located in the appendices of this document.

Review the warnings and precautions listed in the manual before setting up or servicing this chassis. These include information in Chapter 2: System Safety and the warning/precautions listed in the setup instructions.

5-3 Removing the Chassis Cover

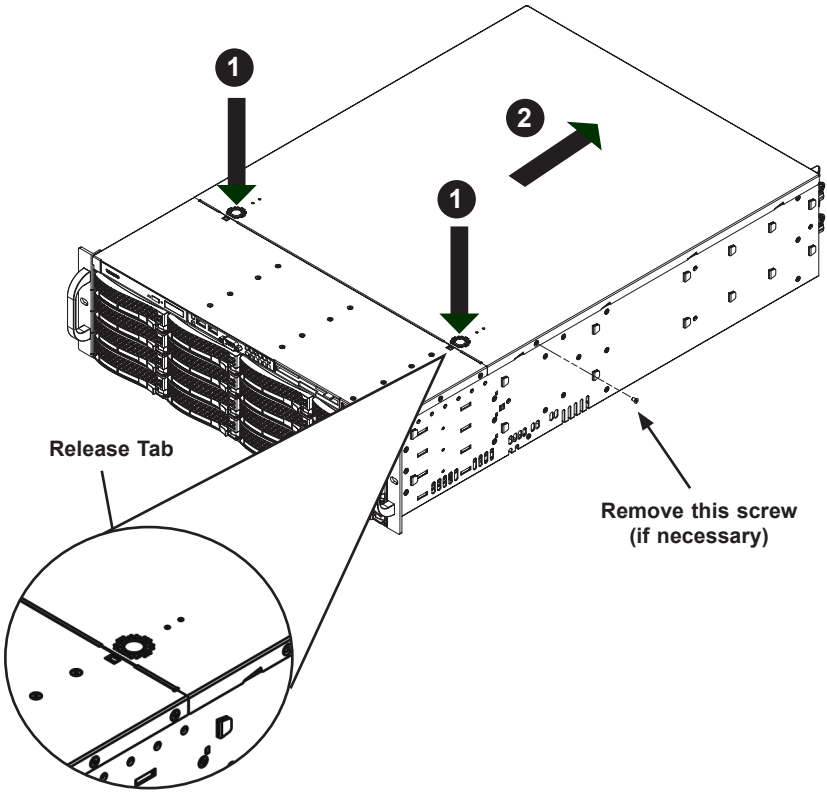


Figure 5-1: Removing the Chassis Cover

Removing the Cover

1. Press the release tabs to remove the cover from the locked position. Press both tabs at the same time. If necessary, you may need to remove the chassis cover screw.

2. Once the top cover is released from the locked position, slide the cover toward the rear of the chassis and lift the cover off the unit.

Warning: Except for short periods of time, do NOT operate the server without the cover in place. The chassis cover must be in place to allow proper airflow and prevent overheating.

5-4 Installing the Hard Drives

The drives are mounted in drive trays to simplify their installation and removal from the chassis.

Removing Hard Drive Trays from the Chassis

Removing HDD Trays

1. Press the release button on the drive tray. This extends the drive bay handle.

2. Use the handle to pull the drive out of the chassis. When replacing the tray use the handle to lock the tray into place.

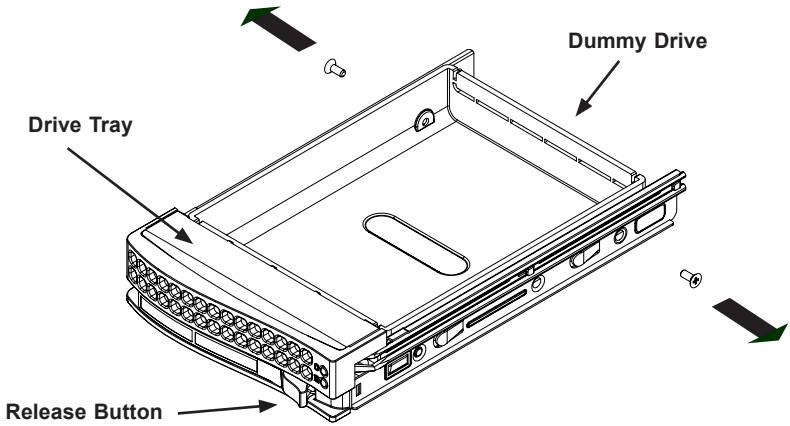


Figure 5-2: Removing Dummy Drive from Tray

Installing a Hard Drive to the Hard Drive Tray

Installing an HDD in a Tray

1. Remove the screws (2) securing the dummy drive to the drive tray and separate the dummy drive.

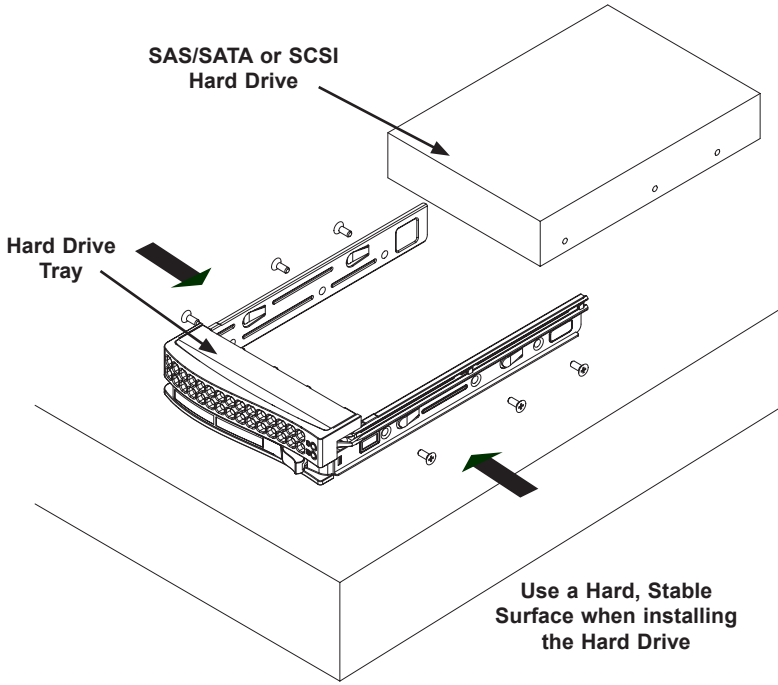


Figure 5-3: Installing a SAS or SATA Drive to Hard Drive Tray

2. Place the hard drive tray on a flat, stable surface such as a desk, table, or work bench.

3. Slide the hard drive into the tray with the printed circuit board side facing down.

4. Carefully align the mounting holes in the hard drive and the tray. Make sure the bottom of the hard drive and bottom of the hard drive tray are flush.

5. Secure the hard drive using all six (6) screws.

6. Replace the drive tray into the chassis. Make sure to close the drive tray using the drive tray handle.

5-5 Installing the Motherboard

Permanent and Optional Standoffs

Standoffs prevent short circuits by securing space between the motherboard and the chassis surface. The SC836 chassis includes permanent standoffs in locations used by most motherboards. These standoffs accept the rounded Phillips head screws included in the SC836 accessories packaging.

Some motherboard require additional screws for heatsinks, general components and/or non-standard security. Optional standoffs are included to these motherboards. To use an optional standoff, you must secure a hexagonal post by screwing it into the necessary spot.

Standoffs Labeling

Standoff locations are labeled on the bottom of the SC836 chassis with the letters: P, D, and A.

P = Most compatible motherboards have a processor or CPU located here. If necessary, place standoffs here for the CPU's heatsink.

D = Place optional standoffs here if your motherboard requires additional posts to hold the unit in place.

A = A number of older motherboards have processors or CPUs located in areas designated "A". Place standoffs here for the CPU's heatsink.

Motherboard Installation

Installing the Motherboard

1. Review the documentation that came with your motherboard. Become familiar with component placement, requirements, and precautions.

2. Confirm that the power supply is disconnected and lay the chassis on a flat surface.

3. Open the chassis cover.

4. Remove any packaging from the chassis. If the rear fans (set of two fans nearest the I/O slots) or the air shroud is in place, remove them.

5. If required by your motherboard, install standoffs in any areas that do not have a permanent standoff. To do this, tighten a hexagonal optional standoff into the chassis.

6. Lay the motherboard on the chassis aligning the permanent and optional standoffs.

7. Secure the motherboard to the chassis using the rounded, Phillips head screws.

8. Secure the CPU(s) and heatsinks to the motherboard.

Power Supply Connections

Connect each of the following cables, as required, by your motherboard manufacturer. In some instances, some cables may not need to be connected.

Power Supply Cable			
Name	**Number**	**Connects to:**	**Description**
20-pin or 24-pin power cable	1	mother-board	20-pin or 24-pin power cable provides electricity to the motherboard. Has 20 - 24 yellow, black, gray, red, orange, green and blue wires.
HDD (Hard Drive) power cable	3	backplane	Each cable has 3 connectors (two Hard Drive [HDD] and one Floppy Drive [FDD]). Attach the HDD connectors to the backplane. **If you are using a SuperMicro backplane, the FDD connector does not need to be attached.**
8-pin mother-board cable	1	mother-board	Provides power to the motherboard CPU. This cable has 2 black and 2 yellow wires.
4-pin mother-board cable	1	mother-board	Provides power to PCI expansion card. This cable has 2 black and 2 yellow wires.
5-pin SMBus power cable (small)	1	mother-board	Allows the SM (System Management) Bus to monitor power supply
2-pin INT cable	1	mother-board	Intrusion detection cable allows the system to log when the server chassis has been opened.

I/O Shield and Add-On Card Setup

The SC836 chassis includes space for an I/O shield and up to seven add-on/ expansion cards.

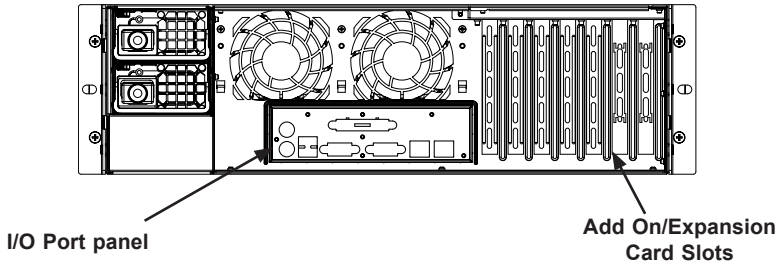


Figure 5-4: SC836 Chassis Rear Add-on Card slots and I/O ports

Installing an Add-On or Expansion Card

Installing Add-on Cards

1. Remove the chassis cover.
2. Locate the motherboard port aligned with the card slot you want to install.
3. Each slot is secured by one screw located on the top (inside) the chassis. Remove this screw.
4. Remove the add-on/ expansion slot cover.
5. Gently slide the expansion/add-on card into the correct motherboard slot. If the Add On card requires a riser card, install it at this time. If necessary, slide the card into the PCI card guide and lock. Never force a component into a motherboard or the chassis.
6. Secure the expansion/add-on card with the screw from the I/O panel.

Installing an I/O Port Panel

Installing the I/O Panel

1. Remove the chassis cover.
2. Locate the I/O port panel.
3. Depending on your motherboard, you must remove the existing port shield and replace with the new one or use the existing the shield to slide the ports through.
4. Connect the port panel to the motherboard following the motherboard documentation.

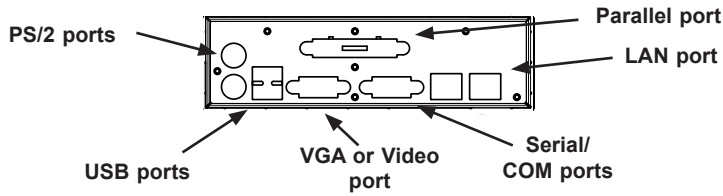


Figure 5-5: SC836 Chassis Port Panel

5-6 Installing the Air Shroud, Rear Fan, and Checking Air Flow

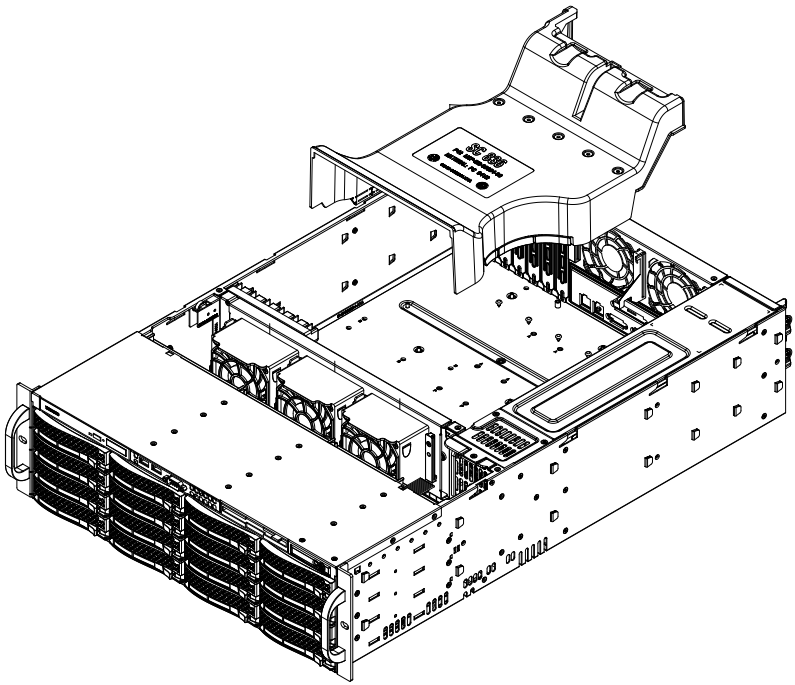


Figure 5-6: Place the Air Shroud

Air shrouds concentrate airflow to maximize fan efficiency. The SC836 chassis air shroud does not require screws to set up.

Installing the Air Shroud

Air Shroud Installation

1. Remove the chassis cover. If necessary, remove the rear fans.

2. Place the air shroud in the chassis, as illustrated. The shroud aligns with the fan holders and covers two of the front fans with two of the rear fans. Make sure the air shroud aligns completely with the chassis.

Installing Rear System Fans

The SC836 Chassis includes three front fans and two rear fans. The front fans are pre-installed. The rear fans must be installed after motherboard and air shroud setup.

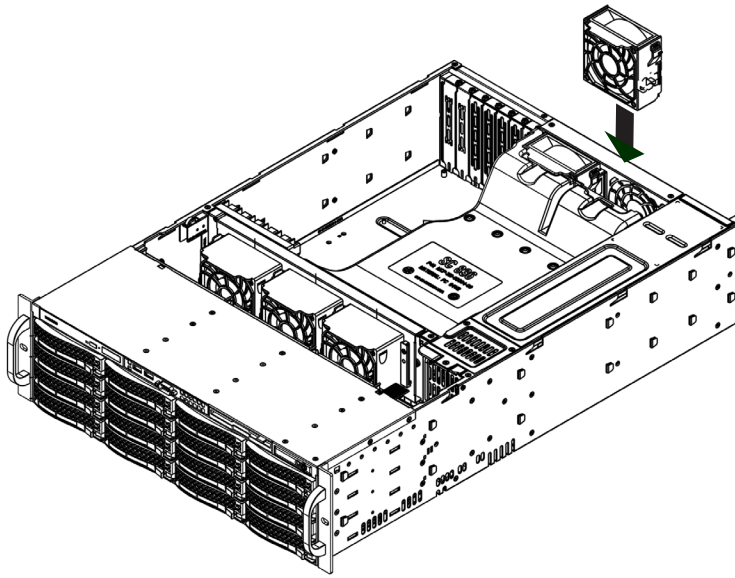


Figure 5-7: Install the Rear Fan

Installing Rear Fans

1. Confirm that the air shroud is correctly placed.
2. Slide the rear fan into the slot as illustrated. The fan release tab should be on the side closest to the power supply.
3. Make sure that the fan is secure in the fan housing and the housing is correctly connected to the power supply.

Checking the Server's Air Flow

Checking the Air Flow

1. Make sure there are no objects to obstruct airflow in and out of the server. If necessary, route the cables through the cable rack.

2. Do not operate the server without drives or drive trays in the drive bays.

3. Use only recommended server parts.

4. Make sure no wires or foreign objects obstruct air flow through the chassis. Pull all excess cabling out of the airflow path or use shorter cables.

5. Do not operate the server for extended periods of time without the air shroud in the proper place.

5-7 Chassis Maintenance

Replacing a System Fans

Five heavy duty fans provide cooling for the chassis. These fans circulate air through the chassis as a means of lowering the chassis' internal temperature. The SC836 Chassis includes three front fans and two rear fans.

SC836 chassis fans are fully hotswappable. In other words, fans may be removed and replaced without having to power down the server.

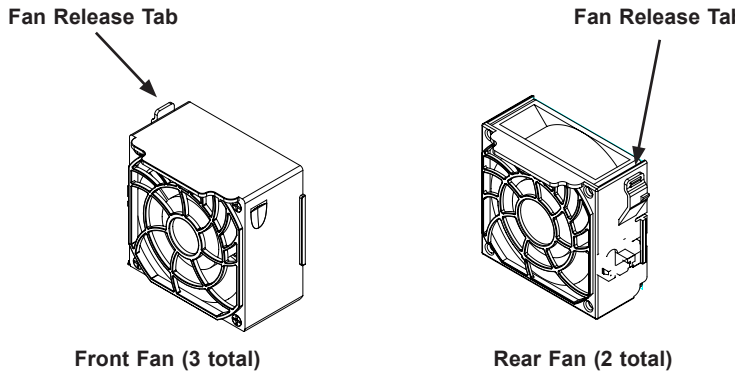


Figure 5-8: Chassis Fans

Replacing Fans

1. Open the chassis and locate the faulty fan. Never run the server for an extended period of time with the chassis open.

2. Press the release tab on the fan and pull the fan upward.

3. Slide the new fan into the fan housing. Make sure the power connectors are correctly aligned. The new fan will be immediately active.

Replacing the Power Supply

The power supply for the SC836 Chassis is redundant and hot swappable, meaning the power supply can be changed without powering down the system.

Replacing a Power Supply Module

1. The SC836 chassis includes a redundant power supply (at least two power modules), you can leave the server running if you remove only one power supply at a time.
2. Unplug the power supply that you will replace.
3. Push the release tab (on the back of the power supply) as illustrated.
4. Pull the power supply out using the handle provided.
5. Replace the failed power module with the same model.
6. Push the new power supply module into the power bay until you hear a click.
7. Plug the AC power cord back into the module and power up the server.

Replacing the Power Distributor

Redundant server chassis that are 2U or more high require a power distributor. The power distributor provides failover and power supply redundancy. In the unlikely event you must replace the power distributor, do following

Power Distributor Replacement

1. Power down the server and remove the plug from the wall socket or power strip.
2. Remove all cable connections from the power supply to the motherboard, backplane, and other components. Also, remove both power supplies.
3. Locate the power distributor between the power supply and the fan row.
4. Remove the three screws securing the power supply.
5. Gently pull the power distributor from the chassis. Make the guide all the cables through the power distributor housing.
6. Slide the new power distributor module into the power distributor housing. Make that you slide the cables through the bottom of the housing.
7. Reconnect all the power cables, replace the power supply, and insert the plug into the wall.

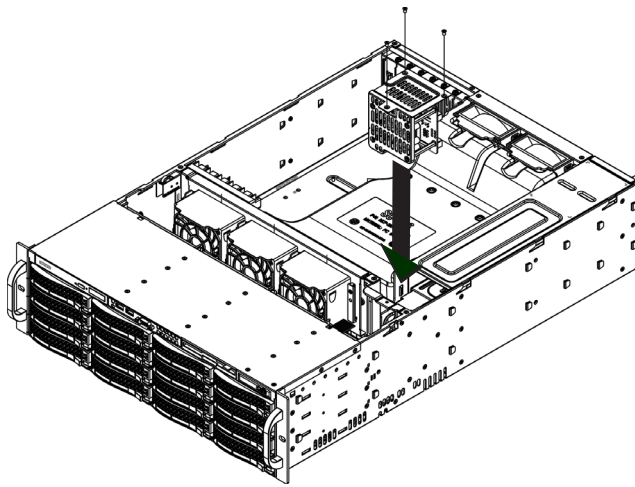


Figure 5-9: Removing the Power Distributor

Replacing the DVD-ROM, Front Panel, and Floppy Drive

SC836 chassis models include a slim DVD-ROM, slim Floppy Drive, and Front Port Panel. Use the instructions in this section in the unlikely event that you must replace any of these components.

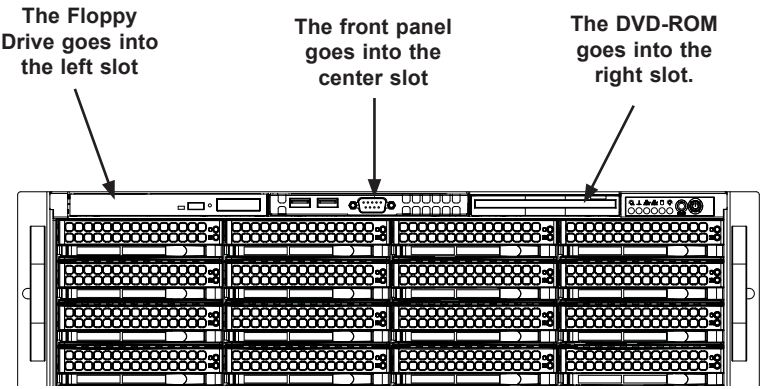


Figure 5-10: Installing the DVD-ROM, Front Panel, and Floppy Drive

Replacing or Installing the DVD Drive

DVD Drive Installation

1. Power down and unplug the system.
2. Remove the chassis cover.
3. **(If you are not installing a new front port panel)** Remove the mini-bezel (grate) from the drive bay The mini-bezel is the small grating that covers the drive bay. Remove this by simply pulling it out of the bay.
   (If you are installing a new front port panel) Remove the old drive by depressing the release tab, then pulling the drive out of the chassis.
4. Insert the new drive unit in the slot until the tab locks into place.
5. Connect the data and power cables to the backplane and if necessary, the-motherboard.

For more information, see the manual for your backplane in the appendix

Replacing or Installing the Floppy Drive

Installing a Floppy Drive

1. Power down and unplug the system.
2. Remove the chassis cover.
3. **(If you are not installing a new front port panel)** Remove the mini-bezel (grate) from the drive bay The mini-bezel is the small grating that covers the drive bay. Remove this by simply pulling it out of the bay.
   (If you are installing a new front port panel) Remove the old drive by depressing the release tab, then pulling the drive out of the chassis.
4. Insert the new drive unit in the slot until the tab locks into place.
5. Connect the data and power cables to the backplane and, if necessary, motherboard.

For more information, see the manual for your backplane in the appendix.

Replacing or Installing the Front Port Panel

Installing the Front Panel

1. Power down and unplug the system.

2. Remove the chassis cover.

3. **(If you are not installing a new front port panel)** Remove the mini-bezel (grate) from the drive bay The mini-bezel is the small grating that covers the drive bay. Remove this by simply pulling it out of the bay.
   (If you are installing a new front port panel) Remove the old front port panel by depressing the release tab, then pulling the front port panel out of the chassis.

4. Insert the new unit in the slot until the tab locks into place.

5. Connect the data and power cables to the backplane and, if necessary, motherboard.

6. For more information, see the manual for your backplane in the appendix.

Chapter 6

Advanced Setup

6-1 Overview

This chapter covers the steps required to take advantage of the dual port, failover, and cascading features available with the 836EL series backplanes.

If you are not using an 836EL series backplane or you do not want to take advantage of the advanced features, you can skip this chapter

Specific examples and cascading instructions can be found in the SC836 Backplane Manual located in the Appendix section.

Review the warnings and precautions listed in the manual before setting up or servicing this chassis. These include information in Chapter 2: System Safety and the warning/precautions listed in the setup instructions.

6-2 Dual Port and Expanders

Single Ports

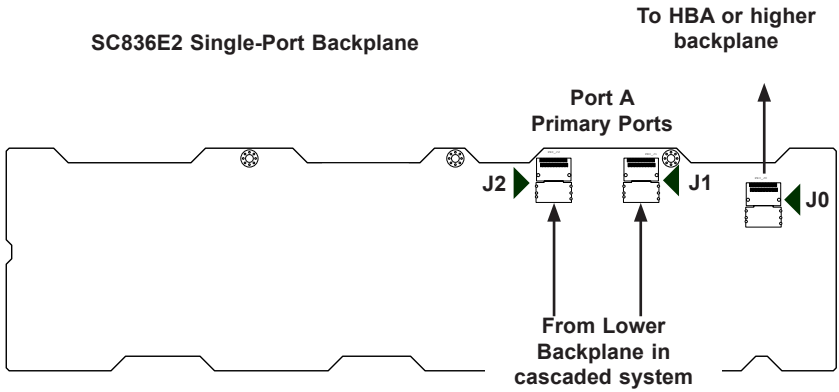
SC 836EL1 backplanes have a single-port expander that access all 16 drives and supports cascading.

Dual Ports

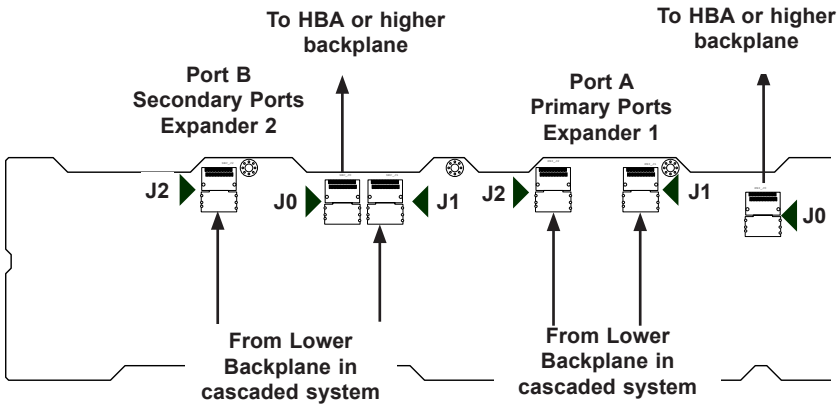
SC 836EL2 backplanes have dual-port expanders that access all 16 drives. These dual-port expanders supports cascading, failover and recovery.

Note: Both 836EL series backplanes support SAS drives only.

SC836E2 Single-Port Backplane



SC 836E2 Dual-Port Backplane



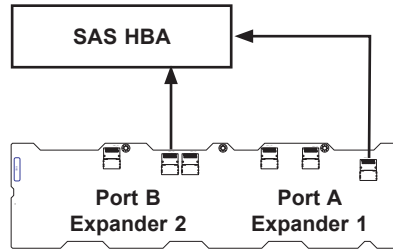
6-3 Failover

Failover is the ability to automatically switch to a redundant path when a primary path fails or becomes unavailable. Failover is automatic and requires no action on the part of the Administrator.

The SC 836EL2 backplane has two expanders which allow effective failover and recovery. This feature is not supported by the SC 836EL1 backplane.

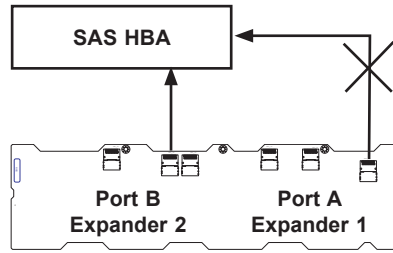
Single Host Bus Adapter

In a single host bus configuration, the backplane connects to one Host Bus Adapter (HBA).



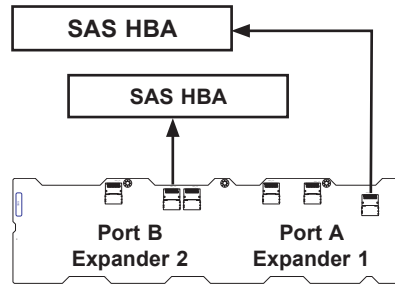
Single Host Bus Adapter Failover

If the Expander or data path in Port A fails, the system will automatically fail over to Port B.



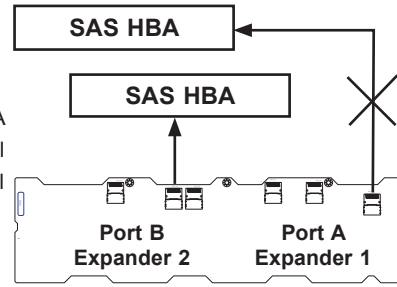
Dual Host Bus Adapter

In a Dual Host Bus Configuration, the backplane connects to two Host Bus Adapters (HBA).



Dual Host Bus Adapter Failover

If the Expander or data path in Port A fails, the system will automatically fail over to Port B. This maintains a full connection to all drives.



6-4 Cascading Backplanes

The SC836 chassis supports cascading when coupled with an 836EL series backplane or other Supermicro backplane with Expander capabilities.

Power Control Card

In a cascaded configuration, backplanes can be linked to create "Just a Bunch of Drives" or JBOD. The primary server requires a Host Bus Adapter (or motherboard). The other servers require a Control Card or Power Card.

Chapter 7
Rack Installation

7-1 Overview

This chapter provides a quick setup checklist to get your chassis up and running. Following these steps in the order given should enable you to have the system operational within a minimum amount of time.

7-2 Unpacking the System

You should inspect the box the chassis was shipped in and note if it was damaged in any way. If the chassis itself shows damage you should file a damage claim with the carrier who delivered it.

Decide on a suitable location for the rack unit that will hold your chassis. It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated. You will also need it placed near a grounded power outlet. Be sure to read the Rack and Server Precautions in the next section.

7-3 Preparing for Setup

The box your chassis was shipped in includes one set of rail assemblies (two inner and 2 outer) and the mounting screws you will need to install the system into the rack. Please read this section in its entirety before you begin the installation procedure outlined in the sections that follow.

Choosing a Setup Location

- Leave enough clearance in front of the rack to enable you to open the front door completely (~25 inches).
- Leave approximately 30 inches of clearance in the back of the rack to allow for sufficient airflow and ease in servicing.
- This product is for installation only in a Restricted Access Location (dedicated equipment rooms, service closets and the like).

Warnings and Precautions!

Rack Precautions

- Ensure that the leveling jacks on the bottom of the rack are fully extended to the floor with the full weight of the rack resting on them.
- In single rack installation, stabilizers should be attached to the rack.
- In multiple rack installations, the racks should be coupled together.
- Always make sure the rack is stable before extending a component from the rack.
- You should extend only one component at a time - extending two or more simultaneously may cause the rack to become unstable.

General Server Precautions

- Review the electrical and general safety precautions that came with the components you are adding to your chassis.
- Determine the placement of each component in the rack *before* you install the rails.
- Install the heaviest server components on the bottom of the rack first, and then work up.
- Use a regulating uninterruptible power supply (UPS) to protect the server from power surges, voltage spikes and to keep your system operating in case of a power failure.
- Allow the hot plug hard drives and power supply modules to cool before touching them.
- Always keep the rack's front door and all panels and components on the servers closed when not servicing to maintain proper cooling.

Rack Mounting Considerations

Ambient Operating Temperature

If installed in a closed or multi-unit rack assembly, the ambient operating temperature of the rack environment may be greater than the ambient temperature of the room. Therefore, consideration should be given to installing the equipment in an environment compatible with the manufacturer's maximum rated ambient temperature.

Reduced Airflow

Equipment should be mounted into a rack so that the amount of airflow required for safe operation is not compromised.

Mechanical Loading

Equipment should be mounted into a rack so that a hazardous condition does not arise due to uneven mechanical loading.

Circuit Overloading

Consideration should be given to the connection of the equipment to the power supply circuitry and the effect that any possible overloading of circuits might have on overcurrent protection and power supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

Reliable Ground

A reliable ground must be maintained at all times. To ensure this, the rack itself should be grounded. Particular attention should be given to power supply connections other than the direct connections to the branch circuit (i.e. the use of power strips, etc.).

7-4 Rack Mounting Instructions

This section provides information on installing the SC836 chassis into a rack unit with the rails provided. There are a variety of rack units on the market, which may mean the assembly procedure will differ slightly. You should also refer to the installation instructions that came with the rack unit you are using.

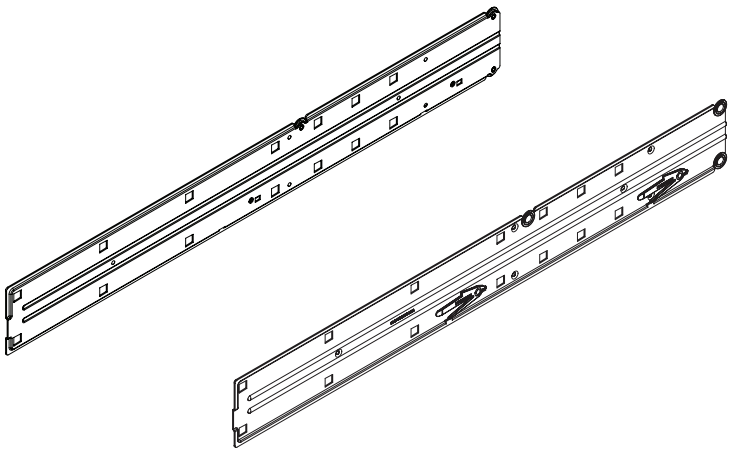


Figure 7-1: Inner Rack Rails

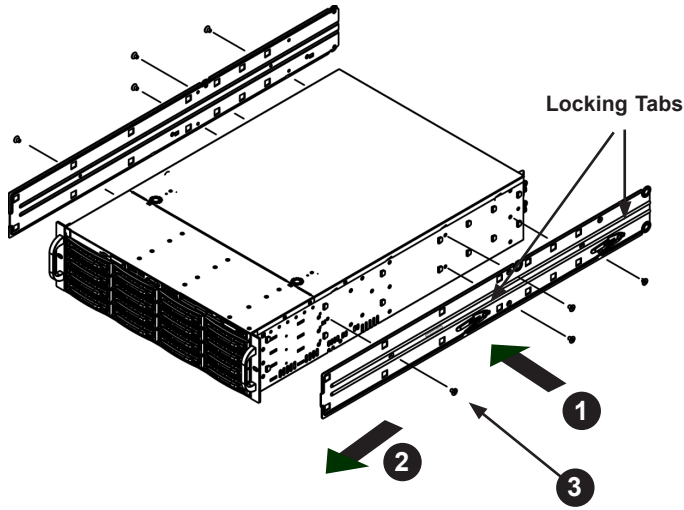


Figure 7-2: Installing the Inner Rack Rails

Installing the Inner Rack Rails

Inner Rail Installation

1. Place the inner rack extensions on the side of the chassis aligning the hooks of the chassis with the rail extension holes.
2. Slide the extension toward the front of the chassis.
3. Secure the chassis with 4 screws as illustrated.
4. Repeat steps 1-3 for the other inner rail.

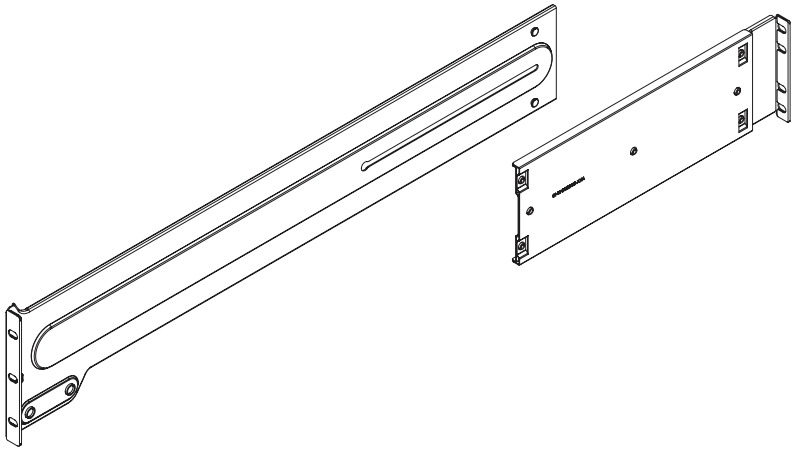


Figure 7-3: Installing the Chassis into the Server Rack

Installing the Outer Rack Rails

Outer rails attach to the server rack and hold the server in place. The outer rails for the SC836 chassis extend between 30 inches and 33 inches.

Installing the Outer Rails

1. Begin by measuring the distance from the front rail to the rear rail of the rack
2. Attach a short bracket to the front side of the right outer rail and a long bracket to the rear side of the right outer rail.
3. Adjust both the short and long brackets to the proper distance so that the rail can fit snugly into the rack.
4. Secure the short bracket to the front side of the outer rail with two M4 screws and the long bracket to the rear side of the outer rail with three M4 screws.
5. Repeat these steps for the left outer rail.

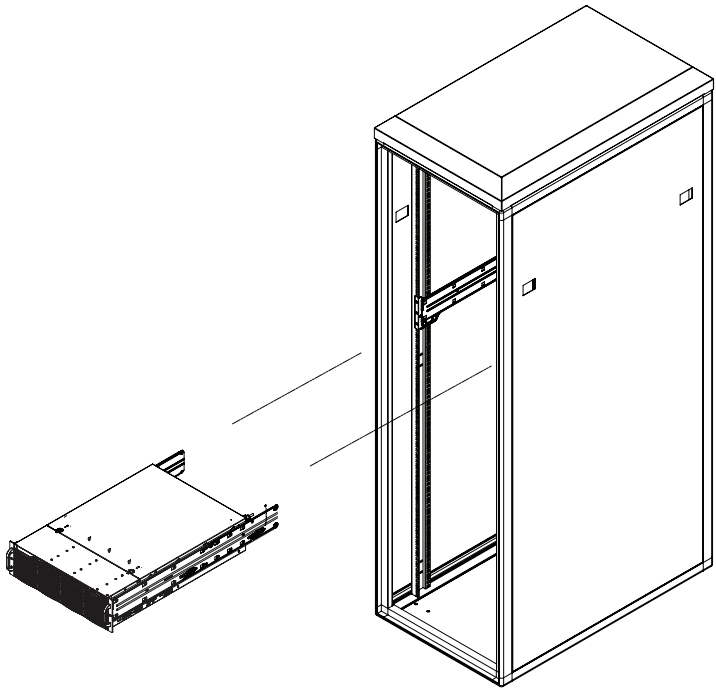


Figure 7-4: Installing the Chassis into the Server Rack

Installing the Chassis into a Rack

1. Confirm that the inner and outer rails are installed on the rack.
2. Line chassis rails with the front of the rack rails.
3. Slide the chassis rails into the rack rails, keeping the pressure even on both sides (you may have to depress the locking tabs when inserting). When the server has been pushed completely into the rack, you should hear the locking tabs "click".
4. (Optional) Insert and tightening the thumbscrews that hold the front of the server to the rack.

Notes

Appendix A

SC836 Chassis Cables

A-1 Overview

This appendix lists supported cables for your chassis system. It only includes the most commonly used components and configurations. For more compatible cables, refer to the manufacturer of the motherboard you are using and our Web site at: www.supermicro.com.

A-2 Cables Included with SC836TQ Chassis (SAS/SATA)

SC836TQ-800			
Part #	**Type**	**Length**	**Description**
CBL-0078	Cable	50 cm	Round Floppy Drive Cable
CBL-0087	Ribbon, Round	20"	16 pin to 16 pin ribbon cable for control panel
CBL-0139L	Wire	45 cm	IDE 80-Wire cable for DVD ROM
-	Cable	6'	Regional power cord
CBL-0180L-01	SATA	various	Set for 4 SATA Cables. Length varied to minimize airflow interference.

A-3 Cables Included with SC836E Chassis

SC836E-800			
Part #	**Type**	**Length**	**Description**
CBL-0078	Cable	50 cm	Round Floppy Drive Cable
CBL-0087	Ribbon, Round	20"	16 pin to 16 pin ribbon cable for control panel
CBL-0139L	Wire	45 cm	IDE 80-Wire cable for DVD ROM
-	Cable	6'	Regional power cord

A-5 Compatible Cables

This section lists cables included with the SC836 Chassis packages

Alternate SAS Cables

Some compatible motherboards have different connectors. If your motherboard has only one SAS connector that the SAS cables must share, use one of the following cables. These cables must be purchased separately.

Cable Name: SAS Cable **Quantity:** 1

Part #: CBL-0175L
Alt. Name: "Big Four"

Description: This cable has one SFF-8484 (32 pin) connector on one end and 4 SAS connectors (7 pins each) at the other. This cable connects from the Host (motherboard or other controller) to the backplane SAS hard drive port.

Cable Name: SAS Cable **Quantity:** 1

Part #: CBL-0116
Alt. Name: iPass or "Small Four"

Description: This cable has one ipass (SFF-8087/mini-sas) connector (36 pins) at one end and 4 SAS connectors on one end. This cable connects from the Host (motherboard or other controller) to the backplane SAS hard drive port.

Cascading/JBOD SAS Cables

Use the following cables when setting up a cascading or JBOD system.

Cable Name: SAS Cable
Quantity: varies by setup
Part #: CBL-0167L
Placement: Internal cable
Ports: Single

Description: Internal cable. Connects the backplane to the Host Bus Adapter (HBA) or external port. Used in single port environments.

Cable Name: SAS Cable
Quantity: varies by setup
Part #: CBL-0168L
Placement: Internal cable
Ports: Dual

Description: Internal cascading cable. Connects the backplane to the Host Bus Adapter (HBA) or external port. Used in dual port environments.

Cable Name: SAS Cable
Quantity: varies by setup
Part #: CBL-0166L
Placement: External cable
Ports: Single or Dual

Description: External cascading cable. Connects ports between servers. With most connectors, use one cable for single port connections and two cables for dual port connections.

Extending Power Cables

Although Super Micro chassis are designed with to be efficient and cost-effective, some compatible motherboards have power connectors located in different areas.

To use these motherboards you may have to extend the power cables to the mother boards. To do this, use the following chart as a guide.

Power Cable Extenders		
Number of Pins	**Cable Part #**	**Length**
24 pin	CBL - 0042	7.9”(20 CM)
20 pin	CBL - 0059	7.9”(20 CM)
8 pin	CBL - 0062	7.9”(20 CM)
4 pin	CBL - 0060	7.9”(20 CM)

Front Panel to the Motherboard

The SC836 chassis includes a cable to connect the chassis front panel to the motherboard. If your motherboard uses a different connector, use the following list to find a compatible cable.

Front Panel to Motherboard Cable (Ribbon Cable)		
Number of Pins (Front Panel)	**Number of Pins (Motherboard**	**Cable Part #**
16 pin	16 pin	CBL - 0049
16 pin	20 pin	CBL - 0048
20 pin	20 pin	CBL - 0047
16 pin	various*	CBL - 0068
20 pin	various*	CBL - 0067

* Split Cables: Use these cable if your motherboard requires several different connections from the front panel.

Notes

Appendix B

SC836 Power Supply Specifications

This appendix lists power supply specifications for your chassis system.

	800W (Redundant)
MFR Part #	PWS-801-1R
Rated AC Voltage	100 - 240V 50 - 60Hz 10A - 4 Amp
+5V standby	4 Amp
+12V	66 Amp
+5V	25 Amp
+3.3V	12 Amp
-12V	0.5 Amp

	710W (Redundant)
MFR Part #	PWS-711-1R
Rated DC Input Voltage	Voltage Range: -36 to -75V (24A-11A) Nominal Voltage: -48V
+5V standby	4 Amp
+12V	58 Amp
+5V	24 Amp
+3.3V	21 Amp
-12V	0.6 Amp

Notes

Appendix C

SAS-836EL Backplane Specifications

To avoid personal injury and property damage, carefully follow all the safety steps listed below when accessing your system or handling the components.

C-1 ESD Safety Guidelines

Electric Static Discharge (ESD) can damage electronic components. To prevent damage to your system, it is important to handle it very carefully. The following measures are generally sufficient to protect your equipment from ESD.

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing a component from the antistatic bag.
- Handle the RAID card by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the card and peripherals back into their antistatic bags when not in use.

C-2 General Safety Guidelines

- Always disconnect power cables before installing or removing any components from the computer, including the backplane.
- Disconnect the power cable before installing or removing any cables from the backplane.
- Make sure that the backplane is securely and properly installed on the motherboard to prevent damage to the system due to power shortage.

C-3 An Important Note to Users

- All images and layouts shown in this user's guide are based upon the latest PCB Revision available at the time of publishing. The card you have received may or may not look exactly the same as the graphics shown in this manual.

Jumper Settings and Pin Definitions

C-4 Front Connectors and Jumpers

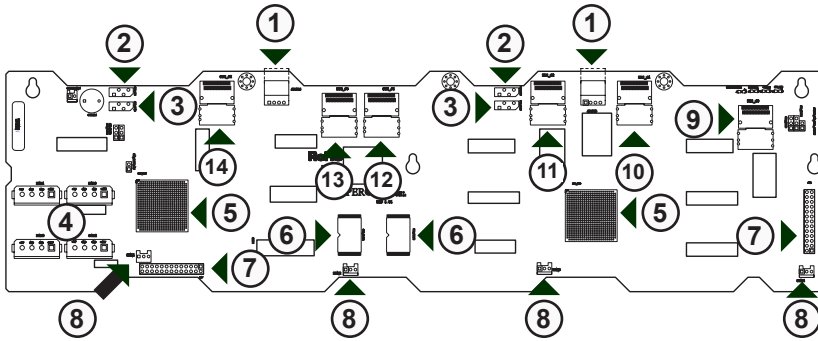


Figure C-1: SAS-836EL2 Backplane

Front Connectors

1. CD-ROM/Floppy Drive Power: JP105 and JP106
2 and 3. Primary and Secondary I^2C connectors (optional)
4. Power Connectors: PWR0, PWR1, PWR2, and PWR3
5. Primary and Secondary Expander Chip
6. Primary and Secondary Flash Chip
7. EPP Connectors: J16 and J17
8. Fan Connectors: Fan2, Fan3, and Fan4 (Fan1 is not used)
9. SAS Connectors: PRI_J0
10. SAS Connectors: PRI_J1
11. SAS Connectors: PRI_J2
12. SAS Connectors: SEC_J1 (not available in EL1 single port backplanes)
13. SAS Connectors: SEC_J0 (not available in EL1 single port backplanes)
14. SAS Connectors: SEC_J2 (not available in EL1 single port backplanes)

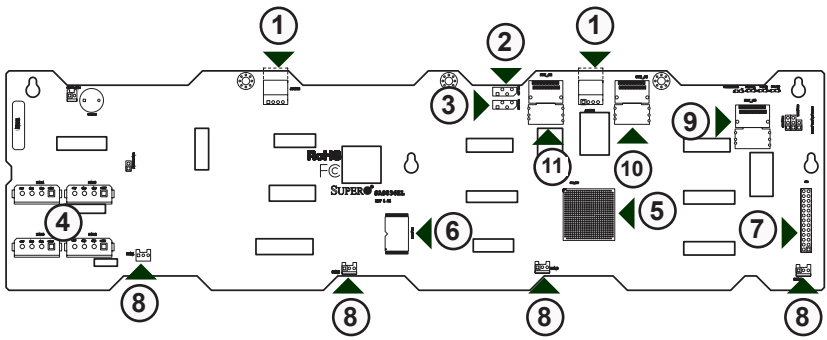


Figure C-2: SAS-836EL1 Backplane

C-5 Front Connector and Pin Definitions

1. CD-ROM/Floppy 4-Pin Connectors

The 4-pin connectors, designated JP105 and JP106, provide power to the CD-ROM and floppy drives. See the table on the right for pin definitions.

CD-ROM/ FDD Power 4-Pin Connector (JP105 and JP106)	
Pin#	Definition
1	+5V
2 and 3	Ground
4	+12V

2 and 3. Primary and Secondary I²C Connectors

The I²C Connectors are used to monitor hard drive activity and status through LED. See the table on the right for pin definitions. There are four total connectors--two primary and two secondary.

I²C Connector Pin Definitions	
Pin#	Definition
1	Data
2	Ground
3	Clock
4	No Connection

Note: These connectors are optional and should only be used by qualified technicians.

4. Backplane Main Power Connectors

The 4-pin connectors, designated PWR0, PWR1, PWR2, and PWR3, provide power to the backplane. See the table on the right for pin definitions.

Backplane Main Power 4-Pin Connector (PWR0, PWR1, PWR2, and PWR3)	
Pin#	Definition
1	+12V
2 and 3	Ground
4	+5V

5. Primary and Secondary Expander Chips

This Primary and Secondary Expander Chips allow the backplane to support dual ports, cascading, and failover.

6. Primary and Secondary Flash Chips

The Primary and Secondary Flash Chips enhance the backplane memory.

7. EPP Ports

The EPP ports are used for manufacturer diagnostic purposes only.

8. Fan Connectors

The 3-pin connectors, designated Fan2, Fan3, and Fan4, provide power to the fans.

A fan may be connected to Fan1; however, connector Fan1 is not fully supported by the backplane. Any fan connected to Fan1 will not be monitored.

See the table on the right for pin definitions.

Fan Connectors (Fan1, Fan2, Fan3, and Fan4)	
Pin#	Definition
1	Ground
2	+12V
3	Tachometer

9-14. SAS Ports

This backplane supports SAS drives only.

Note that the Primary and Secondary sets of SAS ports are in different order. From right to left the ports are Primary 0, 1, 2 and Secondary 1, 0, 2.

C-6 Front Jumper Locations and Pin Definitions

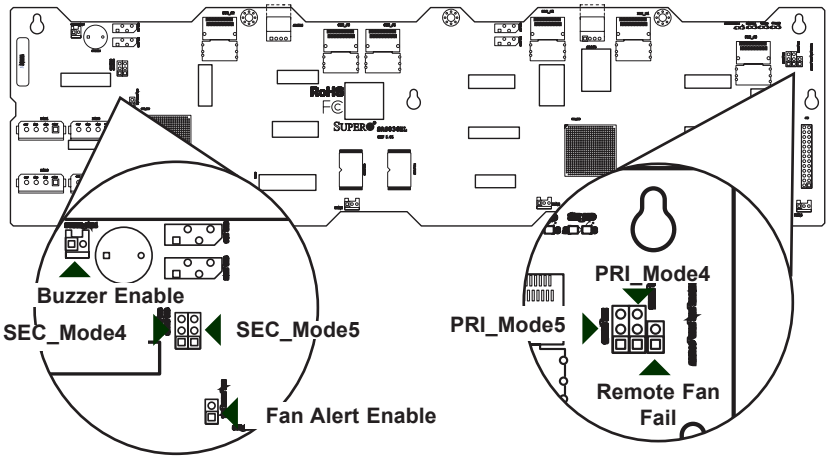
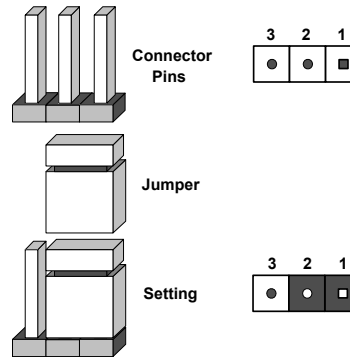


Figure C-3: Backplane Jumper Settings

Explanation of Jumpers

To modify the operation of the backplane, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. Note: On two pin jumpers, "Closed" means the jumper is on and "Open" means the jumper is off the pins.



General Jumper Settings		
Jumper	**Jumper Settings**	**Note**
PRI_MODE4	1-2	Factory Setting Do not change
PRI_MODE5	2-3	Factory Setting Do not change
SEC_MODE4	1-2	Factory Setting Do not change
SEC_MODE5	2-3	Factory Setting Do not change

General Jumper Settings		
Jumper	**Jumper Settings**	**Note**
BUZZER_ENB1	Open: Disable Closed: Enable	Buzzer Enable
FAN_ALERT_ENI	Open: Disable Closed: Enable	Fan Alert Enable

Socket Settings		
Socket	**Socket Setting**	**Note**
REMOTE_FAN_FAIL_SOCKET	Connected	Front Panel Fan Fail indicator (Optional)

Front LED Indicators

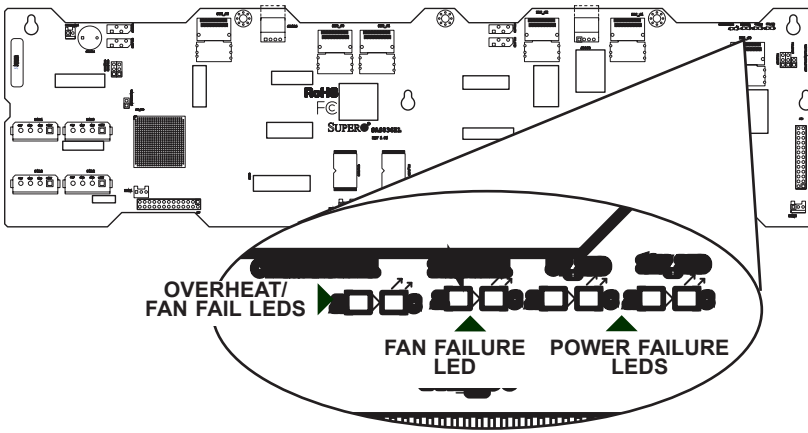


Figure C-4: Backplane LED Indicators

Backplane LEDs		
LED	**STATE**	**SPECIFICATION**
OVERHEATFAIL1	ON	Overheat or Drive Failure
FANFAIL1	ON	Failure in System Fans
5V	OFF	Backplane power failure. Light is on during normal operation.
12V	OFF	Backplane power failure. Light is on during normal operation.

C-7 Rear Connectors and LED Indicators

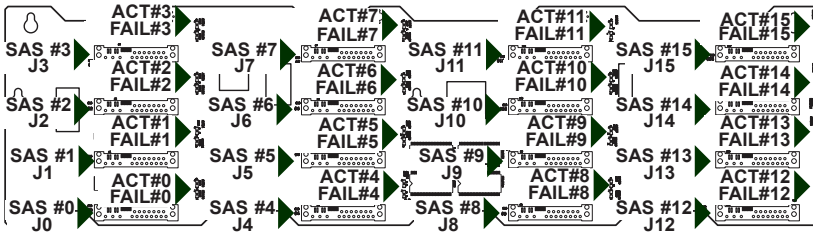


Figure C-5: Rear Connectors and LED Indicators

Rear SAS Connectors			
Rear Connector	**SAS Drive Number**	**Rear Connector**	**SAS Drive Number**
SAS #0	SAS HDD #0	SAS #8	SAS HDD #8
SAS #1	SAS HDD #1	SAS #9	SAS HDD #9
SAS #2	SAS HDD #2	SAS #10	SAS HDD #10
SAS #3	SAS HDD #3	SAS #11	SAS HDD #11
SAS #4	SAS HDD #4	SAS #12	SAS HDD #12
SAS #5	SAS HDD #5	SAS #13	SAS HDD #13
SAS #6	SAS HDD #6	SAS #14	SAS HDD #14
SAS #7	SAS HDD #7	SAS #15	SAS HDD #15

Rear LED Indicators		
Rear LED	**Hard Drive Activity**	**Failure LED**
SAS #0	ACT #0	FAIL #0
SAS #1	ACT #1	FAIL #1
SAS #2	ACT #2	FAIL #2
SAS #3	ACT #3	FAIL #3
SAS #4	ACT #4	FAIL #4
SAS #5	ACT #5	FAIL #5
SAS #6	ACT #6	FAIL #6
SAS #7	ACT #7	FAIL #7
SAS #8	ACT #8	FAIL #8
SAS #9	ACT #9	FAIL #9
SAS #10	ACT #10	FAIL #10

Rear LED Indicators		
SAS #11	ACT #11	FAIL #11
SAS #12	ACT #12	FAIL #12
SAS #13	ACT #13	FAIL #13
SAS #14	ACT #14	FAIL #14
SAS #15	ACT #15	FAIL #15

Dual Port and Cascading Configurations

C-8 Single and Dual Port Expanders

Single Ports

SAS-836EL1 backplanes have a single-port expander that access all 16 drives and supports cascading.

Dual Ports

SAS-836EL2 backplanes have dual-port expanders that access all 16 drives. These dual-port expanders support cascading, failover, and recovery.

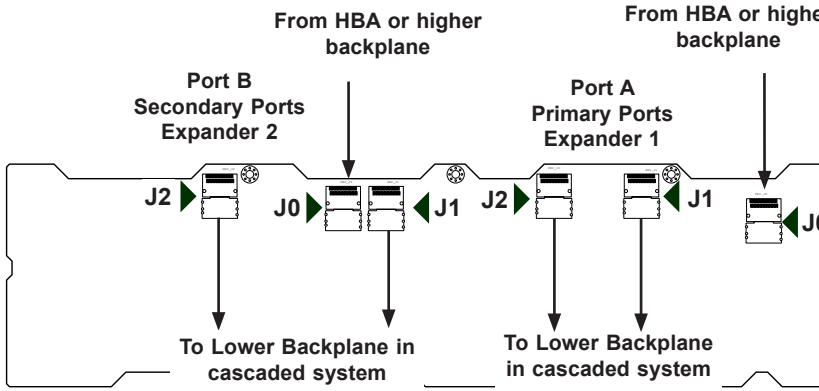


Figure C-6: SAS-836EL2 Dual Port Configuration

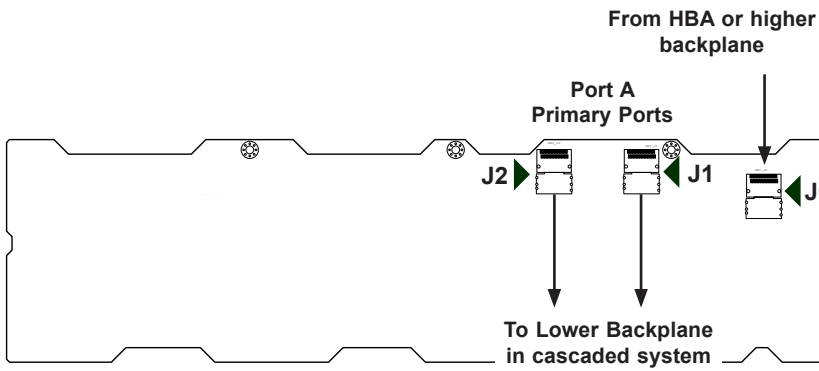


Figure C-7: SAS-836EL1 Single Port Configuration

C-9 Failover

The SAS-836EL2 backplane has two expanders which allow effective failover and recovery.

Single Host Bus Adapter

In a single host bus configuration, the backplane connects to one Host Bus Adapter (HBA).

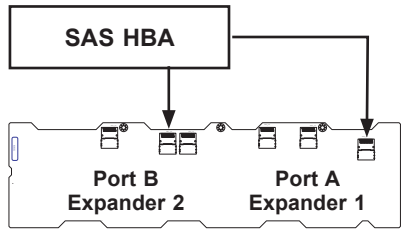


Figure C-8: Single HBA

Single Host Bus Adapter Failover

If the Expander or data path in Port A fails, the system automatically switches to Port B.

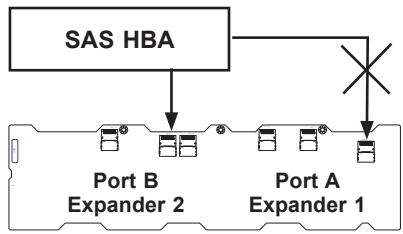


Figure C-9: Single HBA Failover

Dual Host Bus Adapter

In a Dual Host Bus Configuration, the backplane connects to two Host Bus Adapters (HBA).

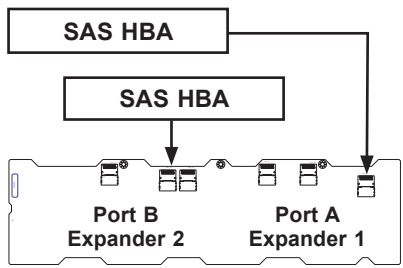


Figure C-10: Dual HBA

Dual Host Bus Adapter Failover

If the Expander or data path in Port A fails, the system automatically switches to Port B. This maintains a full connection to all drives.

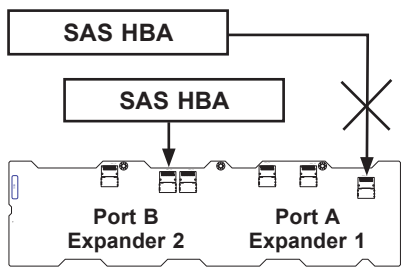


Figure C-11: Dual HBA Failover

C-10 Cables and Chassis Power Card

Chassis Power Card

In a cascaded configuration, the first chassis includes a motherboard and at least one Host Bus Adapter (HBA). Other servers in this enclosed system, include a power card. This section describes the supported power card for the SAS-836 series backplane.

For more information, see the PCC-JBPWR2 power card manual. This manual a can be found at the http://www.supermicro.com or as an appendix in the SAS-836EL chassis manual.

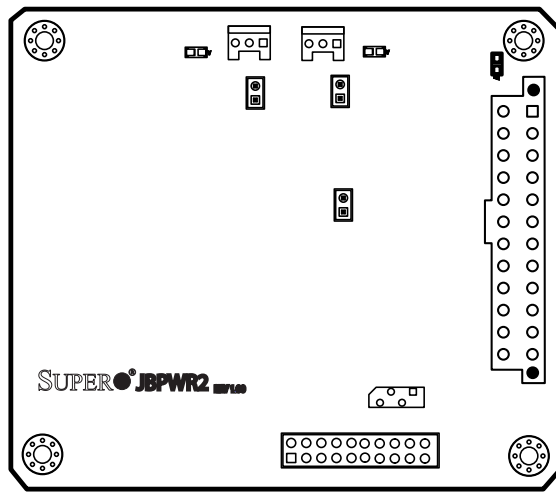


Figure C-12: Chassis Power Card (Sold Separately)

Power Card		
Part Number	**Part Type**	**Where Used**
CSE-PTJBOD-CB1	Power Card	Allows the chassis to be in a JBOD (Just a Bunch of Drives) system.

Connecting an Internal Host Bus Adapter to the Backplane

The following section lists the most common cables used to connect the HBA to the backplane.

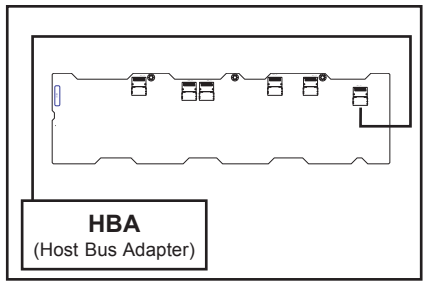


Figure 3-8: Single Internal Host Bus Adapter

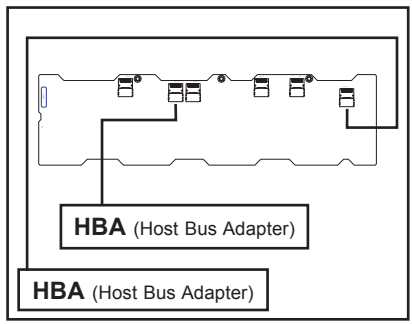


Figure 3-9: Dual Internal Host Bus Adapter

Supported Internal HBA to Backplane Cables

Use the following listed cables to create connections between the internal HBA and SAS-836EL backplane. The cables required depend on the HBA connector.

Cable Name: IPASS TO 4-LANE

Part #: CBL-0117 **Length:** 46 cm (18 inches)

Description: This cable has one SFF-8484 (32 pin) connector on one end and ipass (SFF-8087/mini-sas) connector (36 pins) at the other. This cable connects from the HBA to the SAS-836EL backplane.

Cable Name: IPASS (mini SAS) TO IPASS (mini SAS)

Part #: CBL-0108L-02	**Length:** 39 cm (15 inches)
Part #: CBL-0109L-02	**Length:** 22 cm (9 inches)
Part #: CBL-0110L-02	**Length:** 18 cm (7 inches)

Description: This cable has an ipass (SFF-8087/mini-sas) connector (36 pins) at each end. It connects from the HBA to the SAS-836EL backplane.

Connecting an External Host Bus Adapter to the Backplane

This backplane supports external Host Bus Adapters. In this configuration, the HBA and the backplane are in different physical chassis. This allows a JBOD (Just a Bunch Of Drives) configuration from an existing system.

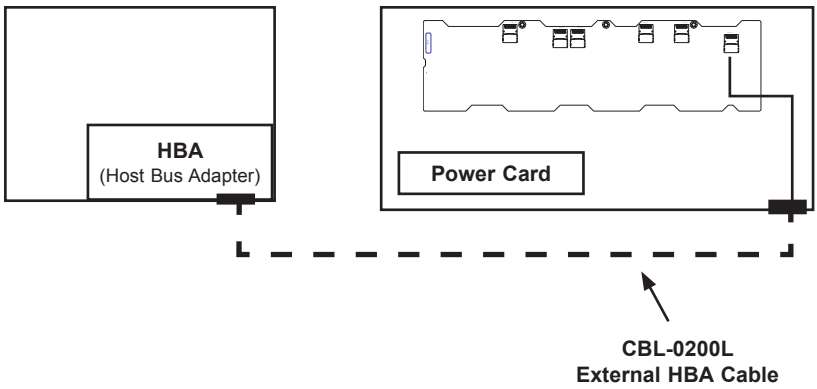


Figure C-13: Single External Host Adapter

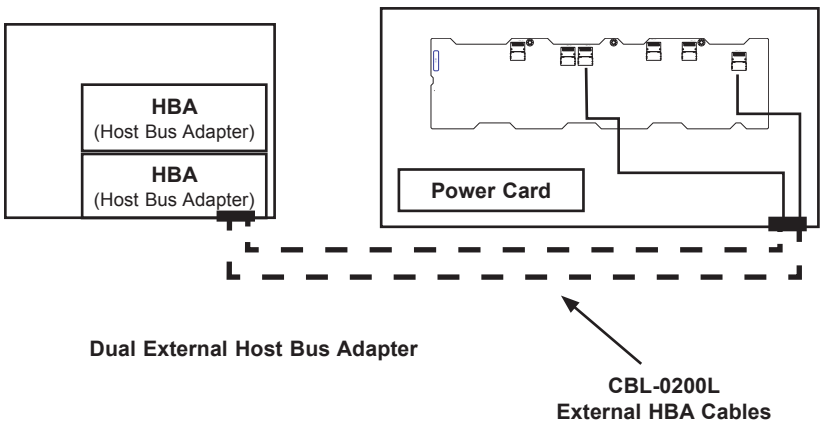


Figure C-14: Dual External Host Bus Adapter

Supported External HBA to Backplane Cable

Use the following cable if your external HBA has an InfiniBand connector.

Figure C-15: SAS InfiniBand Cable (CBL-0200L)

Cable Name: SAS InfiniBand to Mini SAS X4 1M cable, PBF

Part #: CBL-0200L **Length:** 1 meter

Description: This cable has an InfiniBand connector (SFF-8470) on one end and an SFF-8088-1X (26-pins) at the other end.

Connecting Multiple Backplanes in a Single Channel Environment

This section describes the cables used when cascading from a single HBA. These connections use CBL-0167L internal cables and CBL-0166L external cables.

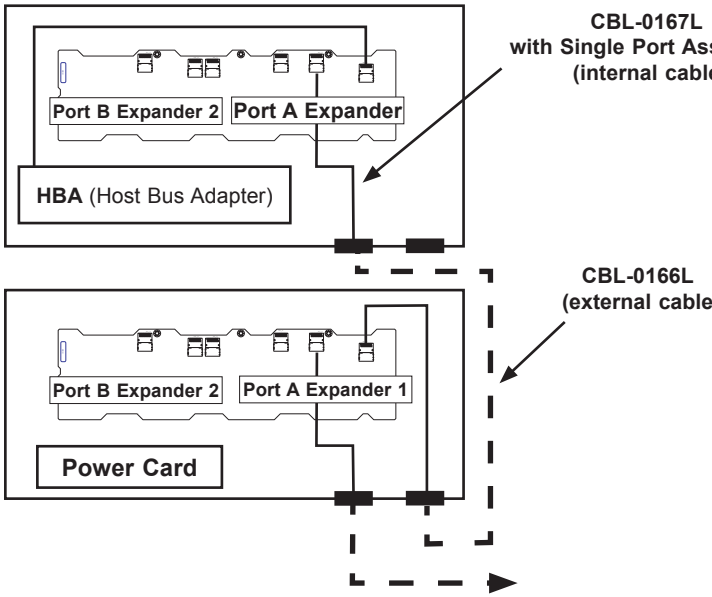


Figure C-16: Single HBA Configuration

Single HBA Configuration Cables

Single Port Cable Assembly

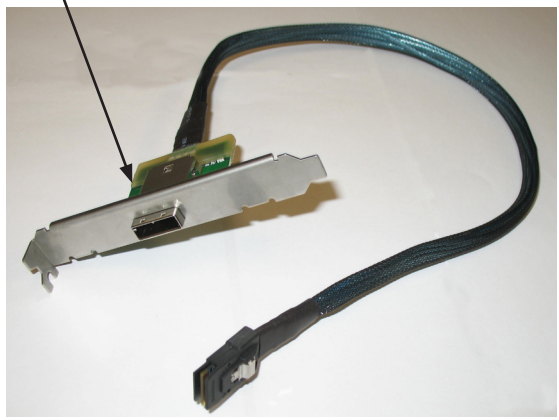


Figure C-17: Single Port Internal Cable (CBL-167L)

Cable Name: SAS EL2/EL1 Backplane Cable (Internal) with 2-port Cascading Cable, 68 cm

Part #: CBL-0167L (SFF-8087 to SFF-8088 x1)
Ports: Single
Placement: Internal cable

Description: Internal cable. Connects the backplane to the Host Bus Adapter (HBA) or external port. Used in single port environments.

Figure C-18: External Cable (CBL-166L)

Cable Name: SAS EL2/EL1 Cascading Cable (External), 68cm

Part #: CBL-0166L (SFF-8088 1x to SFF-8088 x1)
Ports: Single or Dual
Placement: External cable

Description: External cascading cable. Connects ports between servers. With most connectors, use one cable for single port connections and two cables for dual port connections.

Connecting Multiple Backplanes in a Dual Channel Environment

This section describes the cables used when cascading from dual HBAs. These connections use CBL-0168L internal cables and CBL-0166L external cables.

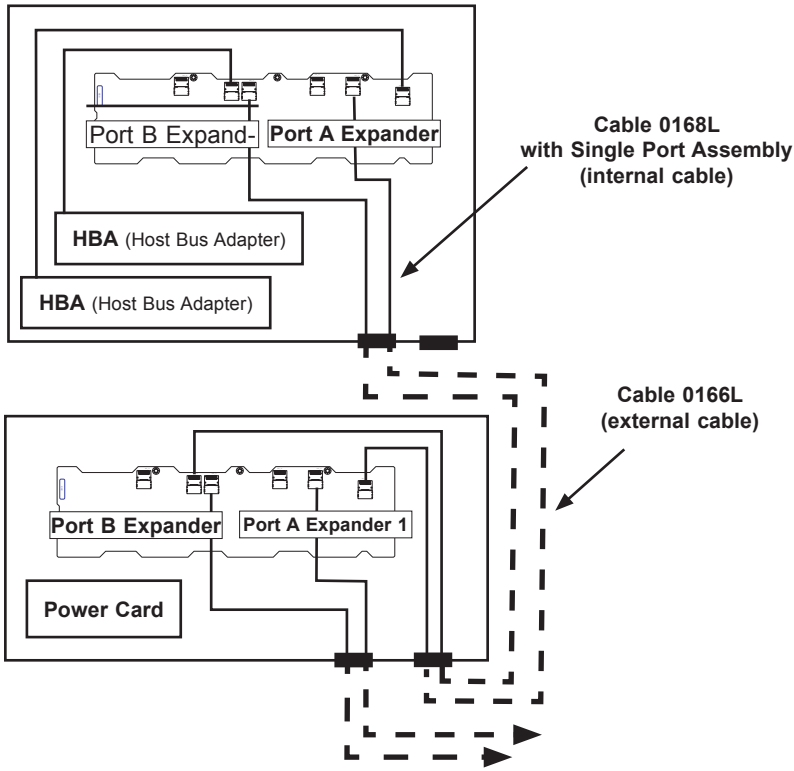


Figure C-19: Dual HBA Configuration

Dual HBA Configuration Cables

Figure C-20: Dual Port Internal Cable (CBL-168L)

Cable Name: SAS Dual-port Cable Assembly, 68/76cm

Part #: CBL-0168L **Placement:** Internal cable
Ports: Dual

Description: Internal cascading cable. Connects the backplane to the Host Bus Adapter (HBA) or external port. Used in dual port environments.

Figure C-21: External Cable (CBL-166L)

Cable Name: SAS EL2/EL1 Cascading Cable (External), 68cm

Part #: CBL-0166L **Placement:** External cable
Ports: Single or Dual

Description: External cascading cable. Connects ports between servers. Use one cable for single port connections and two cables for dual port connections.

C-11 Supported Cascading Configurations

Cascading allows the system to access data at a faster rate by allowing several backplanes to share resources to reduce latency time.

The first backplane in a cascaded system requires a motherboard and HBA. Other servers require a power control card with no motherboard and no HBA. For more information, see the SC836 Chassis Manual available at www.supermicro.com.

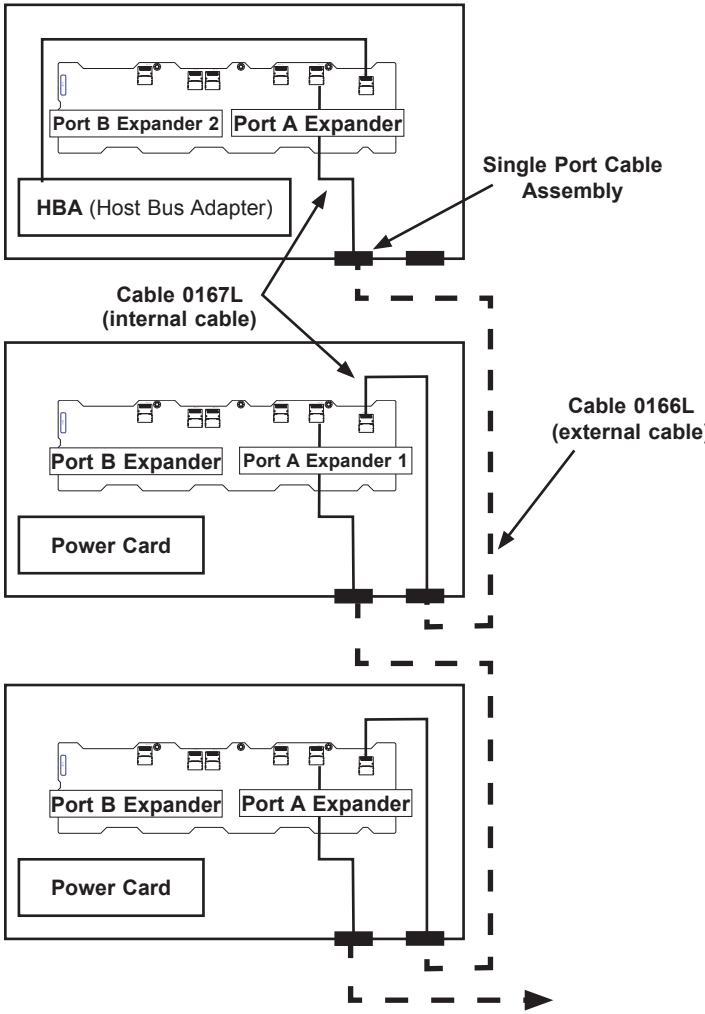


Figure C-22: Simple Cascaded Configuration

Server System with Single SAS HBA

The expanders allow horizontal branching. This configuration also applies to dual ports.

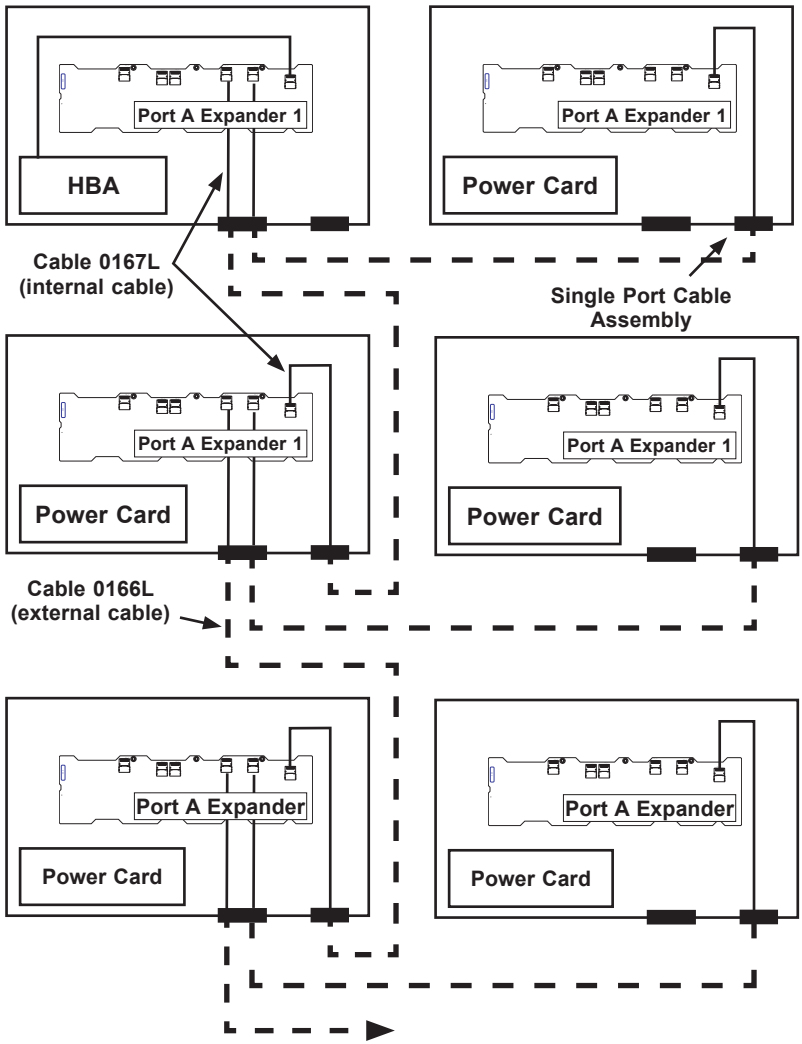


Figure C-23: Cascaded Configuration with Horizontal Branching

Dual SAS HBA and Cascaded Configuration

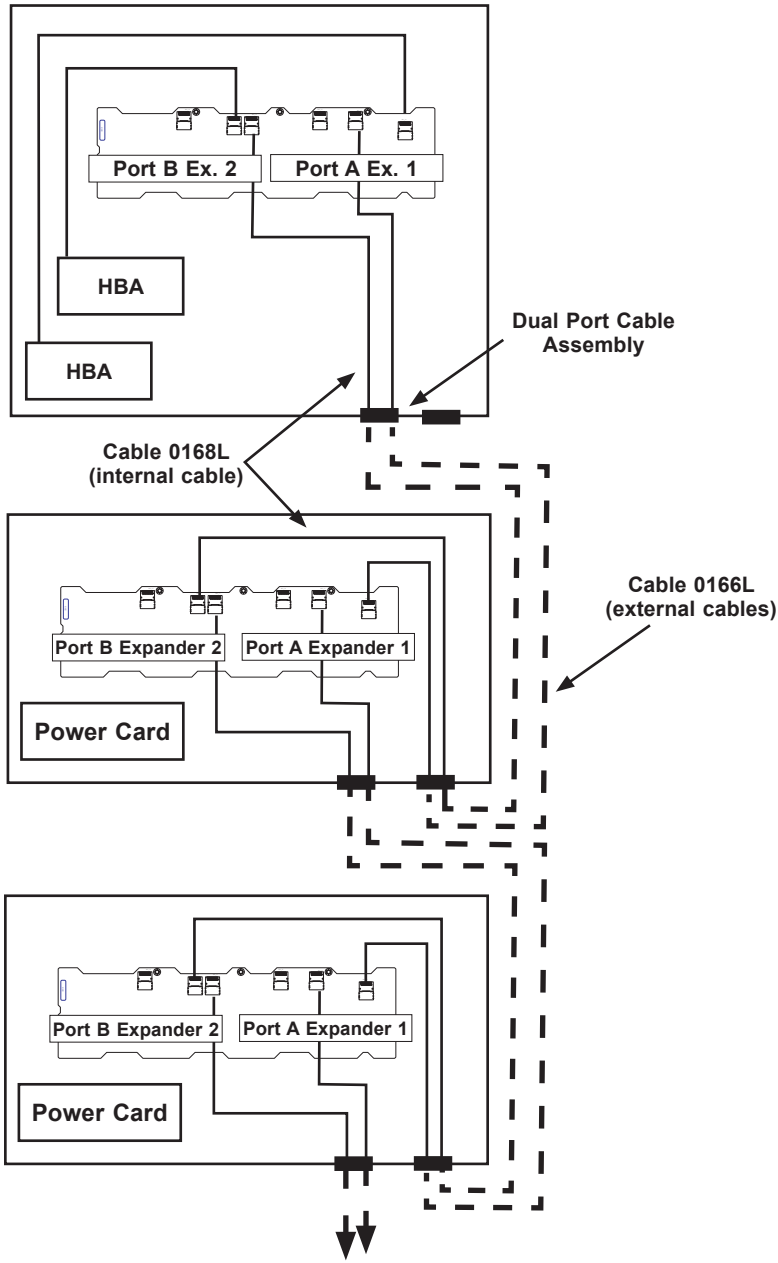


Figure C-24: Dual SAS HBA with Cascaded Configuration

Dual SAS HBA with Cascaded Configuration and Branching

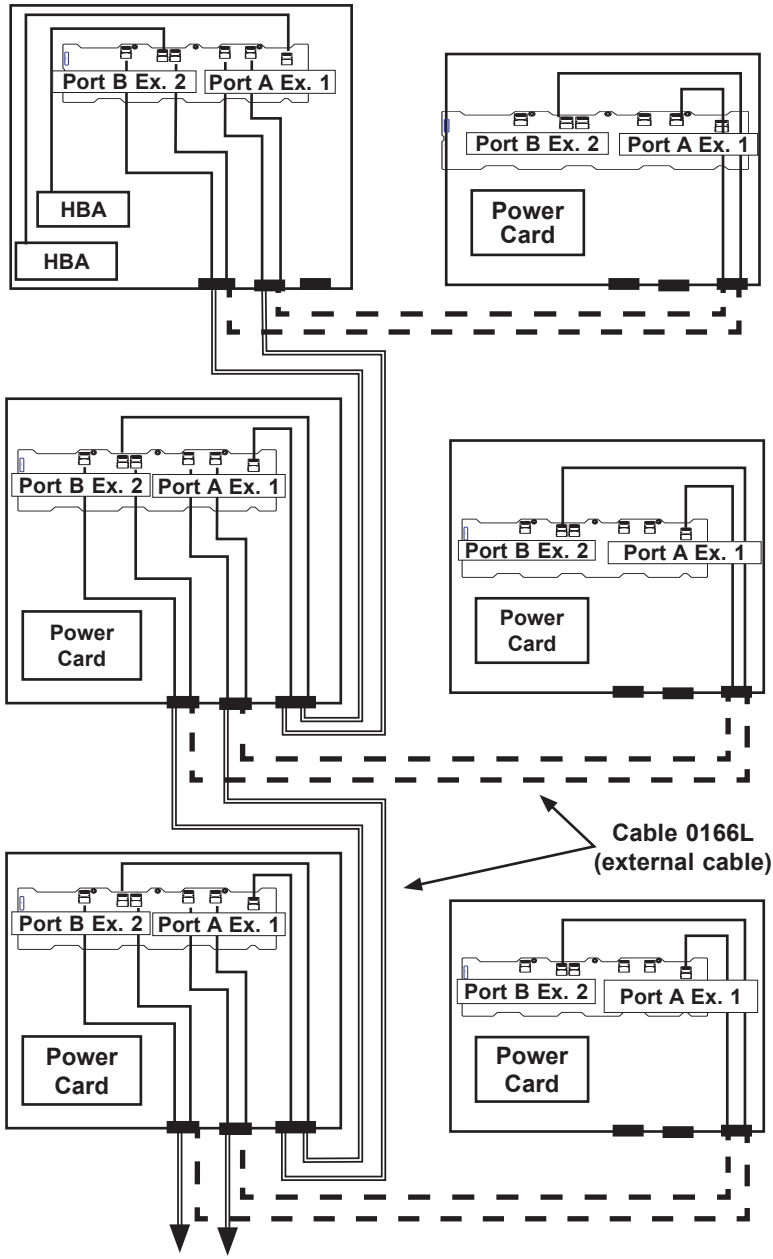


Figure C-25: Dual SAS HBA with Cascaded Configuration and Branching

Notes

Appendix D
SAS-836TQ Backplane Specifications

To avoid personal injury and property damage, carefully follow all the safety steps listed below when accessing your system or handling the components.

D-1 ESD Safety Guidelines

Electric Static Discharge (ESD) can damage electronic components. To prevent damage to your system, it is important to handle it very carefully. The following measures are generally sufficient to protect your equipment from ESD.

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing a component from the antistatic bag.
- Handle the RAID card by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the card and peripherals back into their antistatic bags when not in use.

D-2 General Safety Guidelines

- Always disconnect power cables before installing or removing any components from the computer, including this backplane.
- Disconnect the power cable before installing or removing any cables from this backplane.

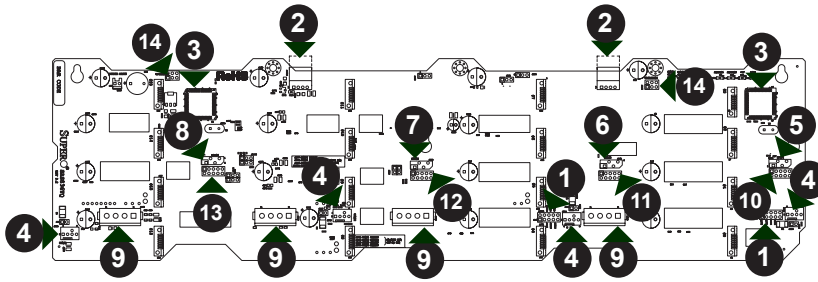
- Make sure that the this backplane is securely and properly installed on the motherboard to prevent damage to the system due to power shortage.

D-3 An Important Note to Users

- All images and layouts shown in this user's guide are based upon the latest PCB revision available at the time of publishing. The card you have received may or may not look exactly the same as the graphics shown in this manual.

Jumper Settings and Pin Definitions

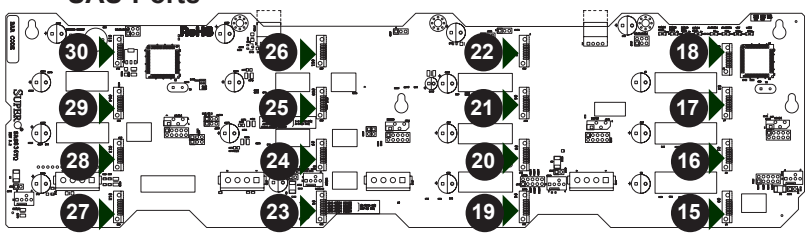
D-4 Front Connectors and Jumpers



Front Connectors

#1. ACT_IN#0-15: JP26 and JP47
#2. DVD-ROM/Floppy Drive Power: JP105 and JP106
#3. Chip: MG9072
#4. Fan Connectors: JP54, JP56, JP58 and JP60
#5. I²C Connector#1 JP37
#6. I²C Connector#2 JP95
#7. I²C Connector#3 JP52
#8. I²C Connector#4 JP96
#9. Power Connectors (4-pin): JP10, JP13, JP46, and JP48
#10. SideBand Connector#1 JP66
#11. SideBand Connector#2 JP68
#12. SideBand Connector#3 JP75
#13. SideBand Connector#4 JP77
#14. Upgrade Connectors: JP69 and JP78
#15. SAS Port #0 J5
#16. SAS Port #1 J6
#17. SAS Port #2 J7
#18. SAS Port #3 J8
#19. SAS Port #4 J10
#20. SAS Port #5 J12
#21. SAS Port #6 J14
#22. SAS Port #7 J16
#23. SAS Port #8 J22
#24. SAS Port #9 J23
#25. SAS Port #10 J24
#26. SAS Port #11 J25
#27. SAS Port #12 J26
#28. SAS Port #13 J29
#29. SAS Port #14 J30
#30. SAS Port #15 J32

SAS Ports



D-5 Front Connector and Pin Definitions

#1. Activity LED Header

The activity LED headers, designated JP26 and JP47, are used to indicate the activity status of each SAS drive. These activity LED headers are used by the host controller for the SATA drives that previously had no activity status output. If using a SAS drive, and for most SATA drives, these activity headers are not required.The Activity LED Header is located on the front panel. For the Activity LED Header to work properly, connect using a 10-pin LED cable.

SAS Activity LED Header Pin Definitions (JP26)

Pin #	Definition	Pin #	Definition
1	ACT IN#0	6	ACT IN#4
2	ACT IN#1	7	ACT IN#5
3	ACT IN#2	8	ACT IN#6
4	ACT IN#3	9	ACT IN#7
5	Ground	10	Empty

SAS Activity LED Header Pin Definitions (JP47)

Pin #	Definition	Pin #	Definition
1	ACT IN#8	6	ACT IN#12
2	ACT IN#9	7	ACT IN#13
3	ACT IN#10	8	ACT IN#14
4	ACT IN#11	9	ACT IN#15
5	Ground	10	Empty

#2. CD-ROM/Floppy 4-Pin Connectors

The 4-pin connectors, designated JP105 and JP106, provide power to the CD-ROM and floppy drives. See the table on the right for pin definitions.

CD-ROM/ FDD Power 4-Pin Connector (JP105 and JP106)

Pin#	Definition
1	+5V
2 and 3	Ground
4	+12V

#3. MG9072 Chip

The MG9072 is an enclosure management chip that supports the SES-2 controller and SES-2 protocols.

#4. Fan Connectors

The 4-pin connectors, designated JP54, JP56, JP58 and JP60, provide power to the fans. See the table on the right for pin definitions. These 4-pin connectors are compatible with 3-pin and 4-pin fans.

Fan Connectors (JP54, JP56, JP58, and JP60)

Pin#	Definition
1	Ground
2	+12V
3	Tachometer
4	No connection

#5., #6., #7., #8. I²C Y-Cable Connectors

The I²C Y-cable connectors, designated JP37, JP52, JP95, and JP96, are for enclosure management of the I²C mode connection. These connectors are used only if the I²C is not embedded into the sideband connectors. See the table on the right for pin definitions.

I²C Y-Cable Connector Pin Definitions (JP37, JP52, JP95, and JP96)

Pin#	Definition
1	Data
2	Ground
3	Clock
4	No Connection

#9. Backplane Main Power Connectors

The 4-pin connectors, designated JP10, JP13, JP46, and JP48, provide power to the backplane. See the table on the right for pin definitions. All four of these connectors must be used at the same time.

Backplane Main Power 4-Pin Connector (JP10, JP13, JP46, and JP48)

Pin#	Definition
1	+12V
2 and 3	Ground
4	+5V

#10., #11., #12., #13. Sideband Headers

The sideband headers are designated JP66, JP68, JP75 and JP77. are for enclosure management of the SGPIO mode connection. See the table to the right for pin definitions.

Sideband Headers (JP66, JP68, JP75 and JP77)

Pin #	Definition	Pin #	Definition
2	**SGPIO:** SDIN **I²C:** Backplane Addressing (SB5)	1	Controller ID (SB6)
4	**SGPIO:** SDOUT **I²C:** Reset (SB4)	3	GND (SB2)
6	GND (SB3)	5	**SGPIO:** SLOAD **I²C:**SDA (SB1)
8	Backplane ID (SB7)	7	**SGPIO:** SCLOCK **I²C:**SCL (SB0)
10	No Connection	9	No Connection

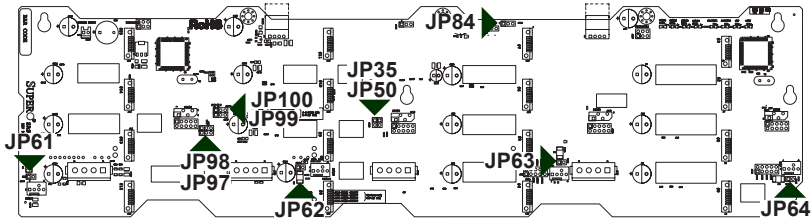
#14. Upgrade Connectors

The upgrade connectors are designated JP69 (for U19) and JP78 (for U40). Upgrade connectors are for manufacturing use only.

#15-#30. SAS Ports

The SAS ports are used to connect the SAS drive cables. The 16 ports are designated #0 - #15. Each port is also compatible with SATA drives.

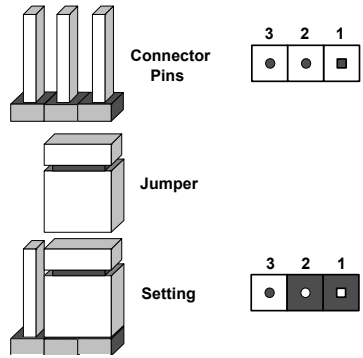
D-6 Front Jumper Locations and Pin Definitions



Explanation of Jumpers

To modify the operation of the backplane, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board.

Note: On two pin jumpers, "Closed" means the jumper is on and "Open" means the jumper is off the pins.



General Jumper Settings		
Jumper	**Jumper Settings**	**Note**
JP35	Open: Default Closed: Reset	9072 Chip Reset #1
JP50	Open: Default Closed: Reset	9072 Chip Reset #2

Fan Jumper Settings

The SAS-836TQ backplane can use up to four fans. To utilize each fan, you must configure both jumpers as instructed below.

Fan Jumper Settings		
Jumper	**Jumper Settings**	**Note**
JP61	Closed: With Fan (default) Open: No Fan	Fan#1 Enable/Disable
JP54		Fan#1 Connector
JP62	Closed: With Fan (default) Open: No Fan	Fan#2 Enable/Disable
JP56		Fan#2 Connector
JP63	Closed: With Fan (default) Open: No Fan	Fan#3 Enable/Disable
JP58		Fan#3 Connector
JP64	Closed: With Fan (default) Open: No Fan	Fan#4 Enable/Disable
JP60		Fan#4 Connector
JP97	1-2 With Fan (default) 2-3 No Fan	Fan #1 Selection for MG907X Monitor
JP98	1-2 With Fan (default) 2-3 No Fan	Fan #2 Selection for MG907X Monitor
JP99	1-2 With Fan (default) 2-3 No Fan	Fan #3 Selection for MG907X Monitor
JP100	1-2 With Fan (default) 2-3 No Fan	Fan #4 Selection for MG907X Monitor

I²C and SGPIO Modes and Jumper Settings

This backplane can utilize I²C or SGPIO. SGPIO is the default mode and can be used without making changes to your jumpers. The following information details which jumpers must be configured to use SGPIO mode or restore your backplane to I2C mode.

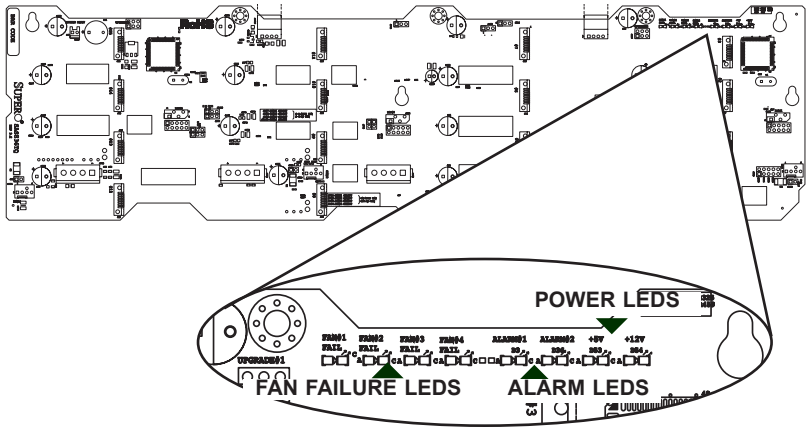
SGPIO/I²C Setting		
Jumper	**Jumper Setting**	**Note**
JP84	1-2 (default)	SGPIO Mode
JP84	2-3	I²C Mode

SAS Port Connections in I²C and SGPIO Settings

Use the following chart when connecting this backplane. If you connect the SAS ports out of order, you will not able to easily identify drives using the LED function.

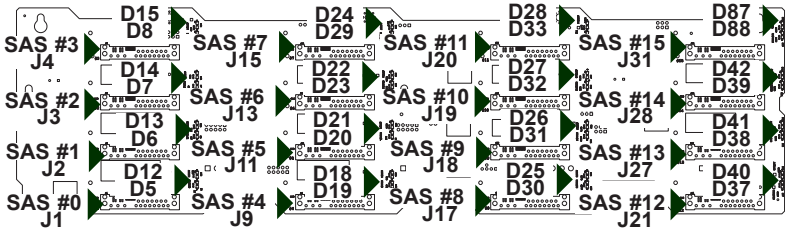
SAS Port Connections in I²C and SGPIO Settings		
Port #	**I²C**	**SGPIO**
# 0 - 3	I²C #1	Sideband #1
# 4 - 7	I²C #2	Sideband #2
# 8 - 11	I²C #3	Sideband #3
# 12 - 15	I²C #4	Sideband #4

Front LED Indicators



Front Pane LEDs		
LED	**STATE**	**SPECIFICATION**
Fan #1 Fail	ON	Failure in Fan #1
Fan #2 Fail	ON	Failure in Fan #2
Fan #3 Fail	ON	Failure in Fan #3
Fan #4 Fail	ON	Failure in Fan #4
Alarm #1	ON	Overheat/Fan Failure/Drive Failure in Channel 1
Alarm #2	ON	Overheat/Fan Failure/Drive Failure in Channel 2
+5V	OFF	Backplane power failure. Light is on during normal operation.
+12V	OFF	Backplane power failure. Light is on during normal operation.

D-7 Rear Connectors and LED Indicators



Rear SAS/SATA Connectors			
Rear Connector	**SAS Drive Number**	**Rear Connector**	**SAS Drive Number**
SAS #0	SAS/SATA HHD #0	SAS #8	SAS/SATA HHD #8
SAS #1	SAS/SATA HHD #1	SAS #9	SAS/SATA HHD #9
SAS #2	SAS/SATA HHD #2	SAS #10	SAS/SATA HHD #10
SAS #3	SAS/SATA HHD #3	SAS #11	SAS/SATA HHD #11
SAS #4	SAS/SATA HHD #4	SAS #12	SAS/SATA HHD #12
SAS #5	SAS/SATA HHD #5	SAS #13	SAS/SATA HHD #13
SAS #6	SAS/SATA HHD #6	SAS #14	SAS/SATA HHD #14
SAS #7	SAS/SATA HHD #7	SAS #15	SAS/SATA HHD #15

Rear LED Indicators		
Rear LED	**Hard Drive Activity**	**Failure LED**
SAS #0	D12	D5
SAS #1	D13	D6
SAS #2	D14	D7
SAS #3	D15	D8
SAS #4	D18	D19
SAS #5	D21	D20
SAS #6	D22	D23
SAS #7	D24	D29
SAS #8	D25	D30
SAS #9	D26	D31
SAS #10	D27	D32
SAS #11	D28	D33
SAS #12	D40	D37
SAS #13	D41	D38
SAS #14	D42	D39
SAS #15	D87	D88

Notes

Appendix E

PCC-JBPWR2 and CSE-PTJBOD-CB1

Power Control Card Specifications

To avoid personal injury and property damage, carefully follow all the safety steps listed below when accessing your system or handling the components.

E-1 ESD Safety Guidelines

Electric Static Discharge (ESD) can damage electronic components. To prevent damage to your system, it is important to handle it very carefully. The following measures are generally sufficient to protect your equipment from ESD.

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing a component from the antistatic bag.
- Handle the RAID card by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the card and peripherals back into their antistatic bags when not in use.

E-2 General Safety Guidelines

- Always disconnect power cables before installing or removing any components from the computer.
- Disconnect the power cable before installing or removing any cables from the card.
- Make sure that the card is securely and properly installed on the motherboard to prevent damage to the system due to power shortage.

E-3 An Important Note to Users

- • All images and layouts shown in this user's guide are based upon the latest PCB Revision available at the time of publishing. The card you have received may or may not look exactly the same as the graphics shown in this manual.

Connectors and LED Indicators

E-4 Front Connectors and Jumpers

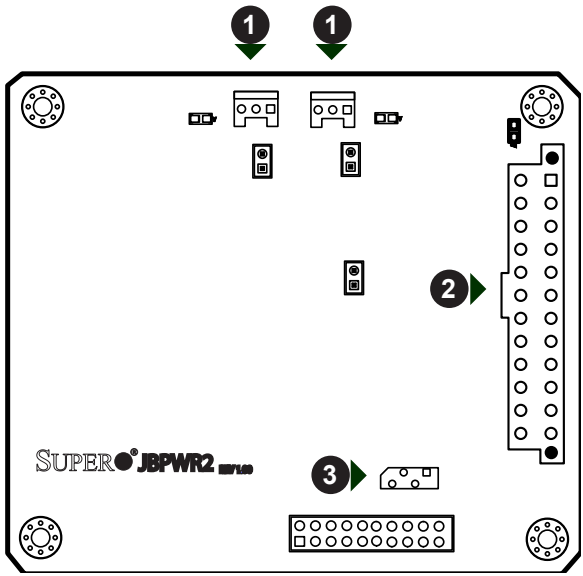


Figure E-1: Front Connectors

Front Connectors

#1. Fan1 and Fan2 connectors
#2. Power connector
#3. Power fault connector (MCU power on switch)

E-5 Front Connector and Pin Definitions

#1. Fan Connectors

The 3-pin connectors, designated Fan1 and Fan2, provide power to the fans.

Since the system will use the power card instead of a motherboard, two fans provide sufficient cooling for the server.

Fan Connectors (Fan1 and Fan42	
Pin#	Definition
1	Ground
2	+12V
3	Tachometer

#2. Main Power Connector

The 12-pin connector provides power to the card to be distributed to the chassis components.

#3. Power Fault Connector (MCU Power On Switch)

In normal operating mode, power is governed by the MCU (Micro Controller Unit). As a sercurity measure, the switch must be depressed for at least four seconds to power down the system.

In the case of an unexpeceted loss of power, the MCU will return the system to the power state it was in at the time when power was lost.

Power Fault Connector (MCU Power On Switch)	
Pin#	Definition
1	Power Fault #1
2	Power Fault #2
3	Power Fault #3
4	Reserved

#4. LED and Switch Connector

The LED Header and Switch Connector, designated JF1, is cabled directly to the front panel. This allows the front panel to display system status.

LED and Switch Connectors (JF1)			
Pin #	Definition	Pin #	Definition
1	Power	2	Ground
3	Reset	4	Ground
5	Vcc	6	Power Fail LED
7	Vcc	8	OH/Fan Fail LED
9	Vcc	10	NIC2
11	Vcc	12	NIC1
13	Vcc	14	HDD LED
15	Vcc	16	Power LED
17	x (Key)	18	x (Key)
19	NMI	20	Ground

E-6 Front Jumper Locations and Pin Definitions

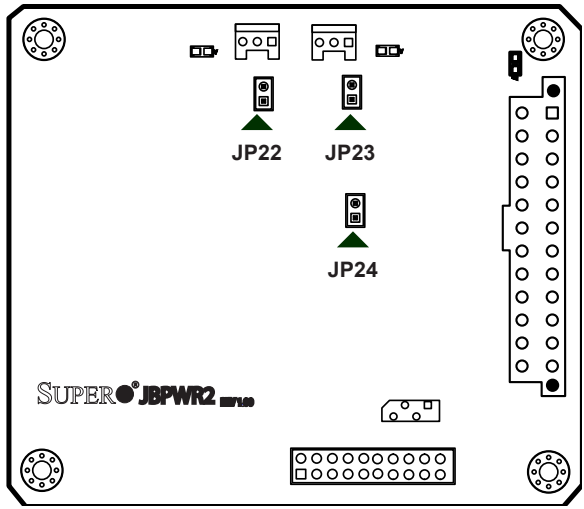
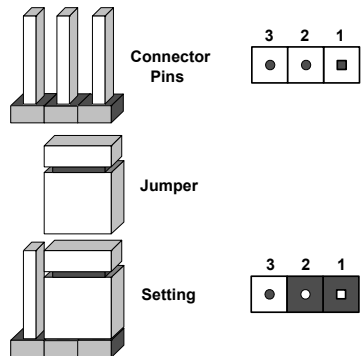


Figure E-2: Front Jumpers

Explanation of Jumpers

To modify the operation of the backplane, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. Note: On two pin jumpers, "Closed" means the jumper is on and "Open" means the jumper is off the pins.



Jumper Settings		
Jumper	**Jumper Settings**	**Note**
JP22	Closed: Enabled Open: Disabled	Fan1
JP23	Closed: Enabled Open: Disabled	Fan2
JP24	Closed: Enabled Open: Disabled	Buzzer

E-7 LED Indicators

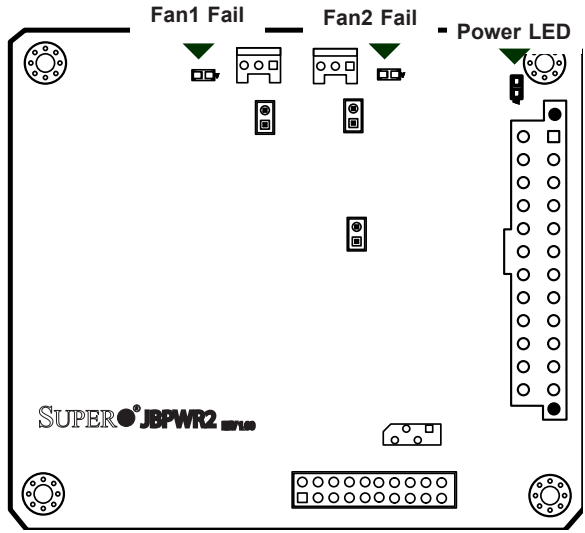
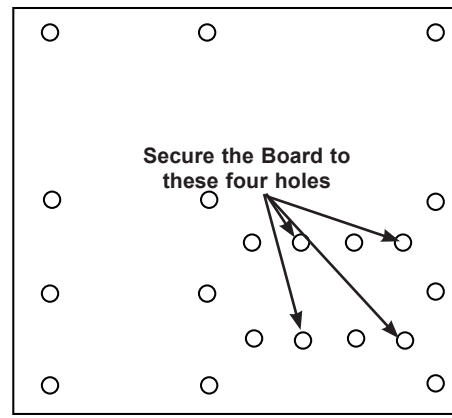


Figure E-3: LEDs

Front Pane LEDs		
LED	**STATE**	**SPECIFICATION**
Power LED	ON	Activity in Power Control Board
Fan1 Fail	ON	Failure in Fan 1
Fan2 Fail	ON	Failure in Fan 2

E-8 Power Card Placement



Front Processor Locations

Figure E-4: Fastening the Power Card

Notes

Disclaimer (cont.)

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